Combined Author Index

Aaronson, H.I. 1381-1384A
1385-1397A
1399-1407A
1703-1715A
1095-1100A
742A
Aballe, M. 2139-2152A
Abbas, M. 1523-1527A
Abbaschian, G.J. 2063-2073A
Abdel-Hamid, A.A. 349-351A
Abe, H. 617-620A
Abis, S. 209-216B
Adachi, K. 945-959A
Adachi, M. 221-229A
Adams, B.L. 2199-2207A
513-517A
Adamson, M.G. 2090-2093A
Adler, P.H. 1725-1737A
Adler, P.N. 635-643A
Agarwal, R.K. 615-620B
Ågren, J. 607-615A
617-620A
2083-2084A
Aifantis, E.C. 1637-1640A
Ajersch, F. 647-656B
Akselsen, O.M. 1529-1536A
Alam, M. 565-574B
Allemand, C.D. 1851-1863A
Allen, S.M. 2239-2247A
Altstetter, C.J. 2086-2090A
An, T.S. 331-337A
An, Z.Z. 331-337A
Angers, R. 37-44A
Ankem, S. 2209-2226A
Antolovich, S.D. 173-180A
Apelian, D. 2049-2062A
Arai, K.I. 1295-1299A
Arnberg, L. 1657-1664A
2077-2080A
Arsenault, R.J. 379-389A
Asaki, Z. 639-645B
367-373B
Awakura, Y. 69-76B
621-627B
19-28B
41-50B

Badini, C. 1665-1669A
Bale, C.W. 1057-1063A
1211-1215A
Ballester, A. 267-270B
Banerji, A. 2127-2137A
Barnes, H.L. 405-413B
Barrailler, V. 1075-1080A
Batterham, R.J. 479-485B
Bautista, R.G. 259-265B
Bayuzick, R.J. 1421-1428A
973-981A
Belton, G.R. 307-316B
Bendersky, L. 781-790A
Bendersky, L.A. 2117-2125A
Benlyamani, M. 647-656B
Bentley, A.P. 1593-1600A
Bernstein, I.M. 1633-1637A
Bertram, L.A. 357-365B
Biancaniello, F.S. 2117-2125A
Bibby, M. 587-600B
Bird, J.E. 1537-1546A
Blanchard, W.K. 1081-1086A
Blander, M. 805-815B
Bobowiec, P. 195-203A
Boettinger, W.J. 2117-2125A
781-790A
Bornstein, N.S. 923-932A
Bower, S. 231-241A
Bowman, R.R. 173-180A
Boyd, W.K. 1601-1610A
Briant, C.L. 2084-2086A
Bricknell, R.H. 583-591A
Brimacombe, J.K. 1493-1503A
677-685B
Brindley, P.K. 1081-1086A
Britto, L. 665-676B
Brody, H.D. 347-356B
Brown, E.L. 31-36A
Buschow, K.H.J. 777-780A
Bustos, A.A. 677-685B
Butler, E.P. 163-167A

Caceres, C.H. 1873-1875A
Cahoon, J.R. 823-832A
Calvo, F.A. 267-270B
Cameron, T.B. 1481-1483A
Cantor, B. 1985-1993A
Carlson, O.N. 1647-1656A
1955-1966A
Carroll, M.M. 1977-1984A
Carter, J.P. 137-149A
Cassagne, T.B. 703-710A
Cathles, L.M. 405-413B
Chan, A.H. 491-496B
Chan, K.S. 1739-1750A
Chandrasekaran, M. 2153-2161A
Chang, K.-M. 1685-1692A
Chang, S.C. 1485-1487A
Chang, Y.A. 133-146B
1104-1106A
1361-1372A
1373-1380A
1241-1245A
785-789B
Charpentier, P.L. 2227-2237A
Chaubal, P.C. 51-60B
Chen, C.C. 415-423B
Chen, H. 65-72A
Chen, T.-K. 107-114A
Cheng, J.-J.A. 2049-2062A
Chhabra, R.P. 355-358A
Cho, E.H. 745-753B
Cho, S.-J. 2175-2182A
Chou, T.-W. 1051-1055A
1547-1559A
Chou, Y.T. 1995-2006A
Chu, W.-Y. 711-716A
717-725A
Chuang, Y.-Y 1361-1372A
1373-1380A
Chung, K. 1632-1633A
1001-1009A
Cieslak, M.J. 2107-2116A
2035-2047A
Clark, W.A.T. 791-798A
Claveau, A. 503-514B
Closset, B. 1250-1253A
Colinet, C. 777-780A
Collier, J.P. 651-661A
Colmenares, C.A. 911-914A
Colwell, J.A. 1065-1074A
Corbett, J.M. 1611-1623A
Courtney, T.H. 1165-1171A
Couture, A. 37-44A
Covino, B.S., Jr. 137-149A
Craven, S.M. 351-355A
Cruells, M. 443-448B
Curreri, P.A. 2301-2303A
1121-1130A

Daehn, G.S. 2295-2298A
Dahmen, U. 807-814A
Dai, L. 799-806A
Danyluk, S. 663-668A
Därmann, C. 1301-1312A
Dayananda, M.A. 362-364A
983-990A
de Fontaine, D. 189-194A
de Jonckere, A. 1671-1683A
Dean, D.C. 1131-1138A
Debroy, T. 565-574B
Decker, R.F. 5-30A
Dharwadkar, H.N. 553-564B
Diebold, T.P. 374A
Doherty, R.D. 2049-2062A
Dowling, J.M. 1611-1623A
Driscoll, T.J. 137-149A
Droste, W. 833-844B
Dubke, M. 119-131B
Dugas, H. 1250-1253A
Dunlap, J.W. 205-213A
Dunlop, G.L. 45-52A
Dunn, G.J. 1851-1863A
1865-1871A
Dupré, B. 657-663B
Duquette, D.J. 339-347A
Durand, F. 349-351A
Dutrizac, J.E. 5-17B

Eagar, T.W. 735-744B
879-885B
887-901B
601-607B
1851-1863A
1865-1871A
Early, J.G. 781-790A
Eary, L.E. 405-413B
Echer, C.J. 2093-2097A
Edmonds, D.V. 1921-1934A
Edwards, G.R. 374A
El-Kaddah, N. 687-693B
El-Rahaiby, S.K. 307-316B
Elliott, J.F. 1461-1469A
147-157B
400B
Elmer, J.W. 2093-2097A
Engler, S. 833-844B
Enomoto, M. 1381-1384A
1385-1397A
1399-1407A
Era, H. 621-633A
Ernst, S.C. 2227-2237A
Espiell, F. 443-448B
Evans, N.D. 1421-1428A
973-981A
Eylon, D. 1935-1947A
549-559A
271-280A

Fang, K. 315-323A
Fang, T.-T. 1447-1453A
Farias, L.R. 77-85B
229-231B
Fautrelle, Y. 687-693B
Ference, T.G. 2239-2247A
Fernández Guillermet, 1809-1823A
Fine, M.E. 2187-2198A
Fior, G.O. 815-822A
Fisher, R.M. 2163-2173A
379-389A
Fiske, M.R. 1121-1130A
Flanagan, W.F. 703-710A
Flanders, H.D. 357-365B
Flynn, H. 914-918B
Fong, H.S. 961-966A
Frankel, G.S. 861-867A
869-875A
Frear, D. 243-252A
Fredell, R.S. 889-898A
Froes, F.H. 1935-1947A
549-559A
271-280A
Fruehan, R.J. 797-804B
317-322B
397-399B
491-496B
535-540B
541-545B
Fuerstenau, M.C. 415-423B
Fukatsu, N. 799-806A
Fultz, B. 967-972A
Funkenbusch, A.W. 923-932A
Funkenbusch, P.D. 1751-1755A

Gabb, T.P. 491-496A
497-505A
507-512A
Ganin, E. 1885-1890A
Garosshen, T.J. 2075-2077A
Garrison, W.M., Jr. 2249-2253A
669-675A
1876-1877A
Gasior, W. 791-796B
Gaskell, D.R. 771-776B
307-316B
Gayda, J. 491-496A
497-505A
507-512A
Gedeon, S.A. 879-885B
887-901B
Gerin, F. 1671-1683A
Gerlach, U. 435-442A
German, R.M. 205-213A
903-906A
Ghosh, A. 553-564B
Ghosh, D.N. 461-469B
Giamei, A.F. 419-428A
347-356B
Gianoglio, C. 1665-1669A
Glaws, P.C. 317-322B
Gleitzer, C. 657-663B
Goel, N.C. 697-702A
Gokhale, A.M. 1625-1629A
742-745A
Goldak, J. 587-600B
Goldstein, J.I. 1131-1138A
163-167A
Gougeon, M. 657-663B
Grabke, H.J. 915-921A
Greegor, R.B. 739-741A
Grong, Ø. 1529-1536A
1797-1807A
Gruzleski, J.E. 1250-1253A
Guimarães, J.R.C. 691-696A
Gustafsson, G. 45-52A
Guthrie, R.I.L. 87-103B
725-733B
449-459B
Gutierrez, E.M. 695-703B

Ha, K.F. 331-337A
Haasen, P. 742A
Hack, J.E. 1739-1750A
Hahn, G.T. 1561-1572A
Hall, E.L. 1685-1692A
407-417A
Hall, I.W. 1075-1080A
Hammond, C. 93-106A
Han, J.K. 2097-2098A
Han, K.N. 415-423B
425-432B
Hanada, S. 1409-1420A
Handa, M. 2031-2034A
Hannula, S.-P. 1757-1767A
Hansen, N. 253-259A
Harrison, R. 357-365B
Hawbolt, E.B. 1493-1503A
Hayes, P.C. 375-381B
383-393B
Headley, T.J. 2107-2116A
2035-2047A
Heaney, J.A., III 983-990A
Heckel, R.W. 1891-1905A
Heldt, L.A. 1081-1086A
Hemker, K.J. 507-512A
Henein, H. 247-257B
29-39B
Herro, H.M. 645-650A
Hetherington, M.G. 1629-1632A
Hicks, P.D. 1837-1849A
Hillert, M. 1878-1879A
741A
Hino, M. 755-761B
913-914B
Hintz, M.B. 1081-1086A
Hirato, T. 19-28B
Hirono, S. 69-76B
41-50B
Hirth, J.P. 791-798A
933-944A
1485-1487A
Hiruta, T. 621-633A
Ho, J.C. 399-405A
Hofmeister, W.H. 1421-1428A
973-981A
Hon, M.-H. 215-220A
Honma, T. 1505-1515A
Hosford, W.F. 1573-1575A
House, R. 587-600B
Howe, J.M. 593-605A
Hsiao, C.-M. 711-716A
717-725A
Hsieh, K.-C. 133-146B
1104-1106A
1373-1380A
Huang, Q. 1561-1572A
Huang, S.-C. 1685-1692A
407-417A
2084-2086A
Hussain, M.M. 575-586B
Hwang, N.-M. 1429-1431A
Hyzak, J.M. 1876-1877A

Igo, Y. 115-120A
Iida, Y. 1323-1334A
Ikuta, I. 261-269A
Im, H.B. 1353-1359A
Imai, T. 115-120A
Inoue, A. 1657-1664A
2077-2080A
Irons, G.A. 77-85B
229-231B
Ishida, T. 281-289B
Ishihara, J. 261-269A
Ito, Y. 1323-1334A
Iwai, T. 2031-2034A
Iyengar, G.N.K. 323-329B
Izumi, O. 1409-1420A
1433-1439A

Jacob, K.T. 1102-1104A
763-770B
323-329B
Jacobson, N.S. 1223-1226A
Jaffee, R.I. 755-775A
Jakubovics, J.P. 1629-1632A
Jenowski, G.M. 1891-1905A
Jardine, F.S.J. 1985-1993A
Jata, K.V. 1011-1026A
Jayaraman, N. 2291-2294A
Jayaraman, R. 1493-1503A
Jensen, D.J. 253-259A
Jia, W.X. 331-337A
Jiran, E. 1102-1104A
Jones, R.H. 1229-1240A
Jönsson, B. 607-615A
Judin, V.-P. 259-265B
Jun, G. 1573-1575A

Kaiser, D.L. 147-157B
400B
Kajioka, H. 845-859B

Kajiwara, S. 1693-1702A
Kaku, Y. 171-177B
Kang, S.-J.L. *2175-2182A*
325-330A
1429-1431A
Kang, T.K. *425-432B*
Kasama, A. 159-162B
Kassner, M.E. 2093-2097A
Kato, H. 823-832A
Kato, M. 1949-1953A
Kaufman, M.J. 575-581A
Keefe, P.W. 651-661A
Keene, B.J. 159-162B
Keller, H. 497-501B
Kemori, N. 111-117B
Kerr, H.W. *1611-1623A*
Kerr, W.R. 2298-2300A
Kidd, M. 771-776B
Kikuchi, S. 221-229A
Kim, C.H. *745-746A*
1173-1178A
Kim, H.J. 1157-1164A
Kim, J.I. *967-972A*
Kim, S.-H. 29-39B
Kim, Y.-H. 1157-1164A
Kim, Y.G. 1353-1359A
2097-2098A
Kim, Y.H. 967-972A
Kimmerle, W.L. 1577-1583A
Kinoshita, M. *19-28B*
Kipouros, G.J. 231-232B
Kirkbride, R. 2007-2016A
Kleppa, O.J. 1217-1221A
Klueh, R.L. *1027-1034A*
Knorovsky, G.A. 2107-2116A
Knott, J.F. 231-241A
Ko, H.C. *232-234B*
609-610B
Kobayashi, Y. 2255-2263A
Kola, R.R. 1447-1453A
Komem, Y. 1885-1890A
Kondo, Y. 367-373B
Korhonen, M.A. 1757-1767A
Kou, S. *2265-2270A*
2271-2277A
Kozuka, Z. 171-177B
Kramer, D.P. 351-355A
Krauss, G. 31-36A
Kuban, M.B. 1493-1503A
Kubisch, D.G. 1165-1171A
Kubo, K. *903-911B*
Kum, D.W. 1517-1527A
2295-2298A
Kumar, M. 2099-2102A
Kundrat, D.M. 1461-1469A
1471-1477A
1825-1835A
705-724B
Kuriyama, S. 443-450A
Kusuno, H. 639-645B
Kvaale, P.E. 1529-1536A
Kwon, H. 745-746A
1173-1178A
Kwon, O.-J. 1915-1919A

Laforce, R.P. 1685-1692A
Lahiri, A.K. 105-110B
Lai, G.Y. 1087-1094A
Lai, K.Y.M. 449-459B
Lake, J.S.H. 1907-1913A
Landes, J.D. 473-489A
Landsberg, A. 232-234B
609-610B
Lange, W.F., III 1399-1407A
Latanision, R.M. 861-867A
869-875A
Leader, J.R. 93-106A
Leder, F. 861-868B
869-877B
Lee, C.S. 451-460A
Lee, E.-W. 1035-1041A
1043-1050A
Lee, E.W. 2097-2098A
Lee, H.G. 1353-1359A
Lee, J.-L. 2183-2186A
Lee, J.-Y. 181-187A
2183-2186A
Lee, J.E. 2301-2303A
Lee, S.-L. 833-841A
Lee, S.-M. 181-187A
Lee, S.W. 238-239B
Lee, Y.E. 777-783B
Lee, Y.Y. 1223-1228A
LeGoues, F.K. 742A
Lehtinen, B. 1657-1664A
2077-2080A
Levan, G. 1787-1795A
Leverant, G.R. 1739-1750A
Lewandowski, J.J. 461-472A
1769-1786A
Li, C.-Y. 1757-1767A
Li, P. 1191-1202A
Li, Y. 717-725A
Liao, K.C. 1259-1266A
Liaw, P.K. 473-489A

Lichter, B.D. 703-710A
Lin, C.S. 933-944A
Lin, H.J. *215-220A*
Lin, I.J. 433-442B
Lin, J.-C. 1361-1372A
1241-1245A
785-789B
Lin, M.L. 601-607B
Liu, C. 679-684A
685-690A
Liu, Y. 1433-1439A
Lovey, F.C. 2153-2161A
Lücke, K. 1301-1312A
Luhman, T. 739-741A
Lynch, D.C. 235-238B
817-827B
Lytle, F.W. 739-741A
Lyudkovsky, G. 1267-1275A

MacCrone, R.K. 911-914A
Mackert, J.R., Jr. 746-749A
Majima, H. *69-76B*
621-627B
19-28B
41-50B
Malinsky, I. 503-514B
Manley, B. 247-257B
Marder, A.R. 1277-1285A
Margolin, H. *2209-2226A*
107-114A
451-460A
2017-2029A
Martins, G.P. 1797-1807A
Mason, J.T. 991-1000A
Masumoto, T. 1657-1664A
2077-2080A
Matsumiya, T. 845-859B
Matsuo, M. 1313-1322A
Mazumdar, D. *725-733B*
McCay, M.H. 2301-2303A
McCune, R.A. 515-521B
McEvily, A.J. 1787-1795A
McKelliget, J. 1139-1148A
McLean, A. 159-162B
163-170B
McMinn, A. *877-887A*
McNallan, M.J. 1087-1094A
1223-1228A
McNelley, T.R. 1035-1041A
1043-1050A
Menon, E.S.K. 1703-1715A
Meyers, M.A. 443-450A
217-227B
Meyrick, G. 1523-1527A
Michal, G.M. 1287-1294A
Michel, D.J. *370-374A*
Miglin, M.T. 791-798A
Miller, W.A. 159-162B
163-170B
Mills, K.C. 159-162B
Mills, M.E. 1035-1041A
Minakawa, K. 1787-1795A
Minemura, T. *261-269A*
Miner, R.V. 491-496A
497-505A
507-512A
Mishra, S. 1301-1312A
Misra, A.K. 358-360A
Mittemeijer, E.J. 1441-1445A
Miyazaki, S. 53-63A
115-120A
Mizoguchi, S. 845-859B
Moddeman, W.E. 351-355A
Mohamed, F.A. 365-366A
Mohri, T. 189-194A
Moore, J. 587-600B
Moore, J.J. 914-918B
185-196B
197-207B
Mori, T. 1949-1953A
1751-1755A
Morral, J.E. 1481-1483A
360-362A
Morris, A.E. 914-918B
Morris, D.R. 575-586B
Morris, J.W., Jr. 815-822A
967-972A
243-252A
537-547A
1157-1164A
Moser, Z. 791-796B
Mostafa, M.S. 365-366A
Mu, J. 861-868B
869-877B
Muir, D.M. 523-528B
529-533B
Mukherjee, T.K. 395-397B
Müller, E.M. 915-921A
Murthy, A. 487-490B
Murty, K.L. 1447-1453A

Nachtrab, W.T. 1995-2006A
Nafziger, R.H. 1647-1656A

Nagamori, M. 913-914B
503-514B
Nakamura, T. *339-346B*
Nakiboglu, F. *375-381B*
383-393B
Nardone, V.C. 1577-1583A
Neal, D.F. *93-106A*
Neumann, J.P. 1484-1485A
Ngai, T.L. 1241-1245A
Ni, R. 315-323A
Nieh, T.G. 121-126A
Nishi, Y. 901-903A
Nishida, M. 1505-1515A
Nishida, Y. 833-844B
Nitta, M. 367-373B
Nityanand, N. 247-257B
Nix, W.D. *121-126A*
281-293A
151-162A
Nogi, K. *183-170B*
Notis, M.R. 629-632B
Núñez, C. 629-637B
443-448B

Ogino, K. 163-170B
Oguchi, M. *1657-1664A*
Oh, J.M. 1087-1094A
Ohashi, T. 799-806A
Ohira, T. *843-852A*
Ohmori, K. 1295-1299A
Ohno, R. 291-305B
Oka, M. 1113-1120A
Okabayashi, K. *1203-1209A*
Okamoto, H. 1113-1120A
Oktay, E. 541-545B
Oliveras, J. *629-637B*
Olson, D.L. 374A
1797-1807A
Olson, G.B. 1725-1737A
Onaka, S. 1949-1953A
Oreper, G.M. 735-744B
Östlund, L. 1809-1823A
Otsuka, K. *53-63A*
115-120A
Owen, C.V. 527-535A
853-859A
1179-1189A
Owen, W.S. 1725-1737A
Oyama, T. 1517-1527A
Ozberk, E. *87-103B*
Ozturk, B. 397-399B

Page, R.A. 877-887A
Pak, J.J. 797-804B
Palmer, B.R. *415-423B*
Pao, Y.-H. 843-852A
Papaléo, R. 691-696A
Papazian, J.M. 635-643A
Park, H.-H. 325-330A
1915-1919A
Park, W.C. 861-868B
Pasturel, A. *777-780A*
Patel, B. 587-600B
Pati, S.R. 360-362A
Paul, S. 461-469B
Payer, J.H. 1601-1610A
Pednekar, S.P. 1601-1610A
Pehlke, R.D. 238-239B
903-911B
Pekguleryuz, M. 1250-1253A
Pelton, A.D. 1057-1063A
1211-1215A
805-815B
Perkins, J. 195-203A
945-959A
Perng, T.P. 2086-2090A
Peterson, D.T. 645-650A
Pickens, J.R. 1095A
Pipes, R.B. *1051-1055A*
Pirich, R.G. 1149-1155A
1247-1249A
Pletka, B.J. *1891-1905A*
Pollock, T. 1537-1546A
Posthill, J.B. 1921-1934A
Pradelli, G. 1665-1669A
Prasannan, P.C. *915-921A*
Predel, B. 791-796B
Price, C.E. 889-898A

Raman, V. 1100-1102A
Ramesh Babu, S. *471-477B*
Rankin, W.J. 61-68B
Rapp, R.A. 933-944A
1065-1074A
Rehbein, D.K. 1955-1966A
Reid, K.J. 197-207B
Reif, W. *2127-2137A*
Reineking, W.H. 2090-2093A
Reiss, H. 869-877B
Reuter, K.B. *163-167A*
Rhines, F.N. 2139-2152A
Ribeiro, E.A.A.G. 691-696A

Richards, G.G. 677-685B
Richardson, B.C. 1479-1481A
Risbud, S.H. *561-566A*
1479-1481A
Ritter, A.M. 727-737A
Robinson, F.P.A. 1837-1849A
Robinson, M.B. *1421-1428A*
973-981A
Rodrigues, P.M.B. 367-370A
Romanowska-Haftek, E. 1967-1975A
Romig, A.D., Jr. 2107-2116A
2035-2047A
Rosenfield, A.R. 791-798A
Rosenstein, A.H. 151-162A
Rothman, M.F. 1087-1094A
Ruano, O.A. *1517-1527A*

Sadoway, D.R. *231-232B*
Sakai, T. 1313-1322A
Sakuma, Y. 617-620A
Salcudean, M. *449-459B*
Sam, D.D. 513-517A
Samuel, A.M. 1671-1683A
Samuel, F.H. 1671-1683A
73-91A
127-136A
Sanchez, J.M. 189-194A
Sankaran, S. *911-914A*
Sarreal, J.A. 2063-2073A
Sasaki, Y. 307-316B
Sastri, P. 105-110B
Sato, K. *69-76B*
Savage, W.F. 727-737A
Scalera, J.V. 137-149A
Schaefer, R.J. *2117-2125A*
Schaefer, S.C. 515-521B
Schlesinger, M.E. 235-238B
817-827B
Schmid, R. 1361-1372A
785-789B
Schoen, J.W. 1335-1346A
Schulte, R.L. *635-643A*
Schwenker, S.W. 271-280A
Schwerdtfeger, K. 497-501B
119-131B
Schwitzgebel, G. *791-796B*
Scott, T.E. 527-535A
853-859A
1179-1189A
Seetharaman, S. 179-184B
Sellamuthu, R. 419-428A
347-356B
Sharma, I.G. 395-397B
Shatynski, S.R. 911-914A
Shechtman, D. 2117-2125A
Shen, T.H. 1347-1351A
Sherby, O.D. 1517-1527A
2295-2298A
Shewmon, P. 1523-1527A
Shibata, Y. 111-117B
Shiiki, M. 639-645B
Shimizu, M. 621-633A
Shimizu, Y. 1323-1334A
Shull, R.D. 575-581A
Siewert, T.A. 1797-1807A
Sigworth, G.K. *349-351A*
Singh, J. 65-72A
Sjödén, O. 179-184B
Slane, J.A. 1287-1294A
Smeggil, J.G. 923-932A
Smith, E.F., III 339-347A
Smith, G.C. 1593-1600A
Smith, G.D.W. 1629-1632A
Smith, H.H. 370-374A
Smith, J.F. 1647-1656A
Smith, K.A. 914-918B
185-196B
Smith, R.R. 429-434A
Sohn, H.Y. 51-60B
Sommer, F. 791-796B
Sommerville, I.D. 331-337B
Soscia, G.B. 519-525A
Sosinsky, D.J. *331-337B*
Southwick, P.D. 1267-1275A
Speyer, R.F. 561-566A
1479-1481A
Spitzer, K.-H. 119-131B
Spitzig, W.A. 527-535A
853-859A
1179-1189A
Srivastava, S.K. 1537-1546A
St. John, D.H. 375-381B
383-393B
Staffansson, L.-I. 179-184B
Starke, E.A., Jr. 1011-1026A
Stefanescu, D.M. *1121-1130A*
Stengel, A.F. 1043-1050A
Stephens, J.J. 281-293A
Stone, B.C. *2227-2237A*
Strum, M. 537-547A
Stüwe, H.P. 1455-1459A
Suga, Y. 1313-1322A
Sun, W.-P. *215-220A*
Suzuki, T. 617-620A

Swanson, R.E. 1633-1637A
Swindeman, R.W. 1027-1034A
Szekely, J. 665-676B
487-490B
695-703B
735-744B
1139-1148A
687-693B

Szklarska-Smialowska, Z 2255-2263A

Taberlet, E. 687-693B
Takada, J. 221-229A
Takahashi, I. 2031-2034A
Takasugi, T. 1433-1439A
Tanabe, T. 367-373B
Tanaka, S. 449-459B
Tangri, K. 697-702A
Tantevee, T. 217-227B
Tarby, S.K. 829-832B
Tavlarides, L.L. 615-620B
Tewari, S.N. 2279-2290A
2291-2294A
2099-2102A
Thomas, G. 2163-2173A
Thomas, J.F., Jr. 2227-2237A
Thompson, A.W. 2249-2253A
461-472A
1769-1786A
1633-1637A
Thorvaldsson, T. 45-52A
Tien, J.K. 651-661A
1577-1583A
151-162A
Toaz, M.W. 549-559A
Todd, J.A. 1191-1202A
Toguri, J.M. 547-552B
755-761B
913-914B
339-346B
Tomita, Y. 1203-1209A
Tomono, M. 111-117B
Tomota, Y. 537-547A
Topor, L. 1217-1221A
Trivedi, R. 991-1000A
Tseng, D. 697-702A
Tsuchida, N. 523-528B
529-533B
Tsukihashi, F. 535-540B
541-545B
Tumuluru, M.D. 295-306A

Udupa, A.R. 914-918B
185-196B
Ueshima, Y. 845-859B
Unnam, J. 899-901A
Upadhya, K. 197-207B
271-279B
Utigard, T. 547-552B
339-346B
Uz, M. 1955-1966A

Vaidyanathan, S. 2090-2093A
Van Der Schaaf, P.J. 1441-1445A
Van Gent, A. 1441-1445A
Van Tendeloo, G. 2153-2161A
Vandermeer, R.A. 1717-1723A
Varin, R.A. 1967-1975A
Venkatasubramanian, R. 362-364A
Venkatraman, M. 1484-1485A
Verhoeven, J.D. 991-1000A
Viñals, J. 629-637B
Vogelsang, M. 379-389A
Voigt, R.C. 491-496A

Wada, H. 238-239B
391-398A
1585-1592A
Wagoner, R.H. 1632-1633A
1001-1009A
Wang, H. 1051-1055A
Wang, Y.H. 2265-2270A
2271-2277A
Wang, Z. 107-114A
Warren, G.W. 29-39B
Wasynczuk, J.A. 2163-2173A
Wayman, C.M. 65-72A
1505-1515A
Wayman, M.L. 429-434A
Webster, D. 2007-2016A
Weiss, B.Z. 1885-1890A
Weiss, I. 1935-1947A
549-559A
Weissberger, S. 433-442B
Welsch, G.E. 1935-1947A
Westmacott, K.H. 807-814A
Wiedemann, K.E. 899-901A
Wilkinson, D.S. 1873-1875A
Williams, D.B. 163-167A
Wilson, D.V. 367-370A
Winter, P.L. 307-313A
Witcomb, M.J. 807-814A
Wolke, I. 663-668A
Woodward, R.L. 307-313A
Wright, M.G. 429-434A
Wright, R.N. 519-525A
399-405A
Wu, S.-T. 833-841A

Xu, B.-J. 711-716A

Yaguchi, H. 2080-2083A
2017-2029A
Yamamoto, S. 221-229A
Yang, J.-M. 1547-1559A
Yao, S. 171-177B
Yoon, D.N. 2175-2182A
325-330A
1429-1431A
1915-1919A
Yoshihiro, A. 901-903A
You, Y.-Z. 1104-1106A

Zanner, F.J. 357-365B
Zbib, H.M. 1637-1640A
Zedalis, M.S. 2187-2198A
Zhang, T.-Y. 717-725A
Zimmels, Y. 433-442B

Combined Subject Index

Abatement (pollution)
See Pollution abatement

Abrasion resistance
Wear Resistance of Quenched and Tempered AISI 4137H Steel. 295-306A

Absolute pressure
See Pressure

Absolute viscosity
See Viscosity

Acid cleaning
See Pickling

Acid leaching
See also Hydrochloric acid leaching
Extraction Equilibria in the System $GaCl_3$—$AlCl_3$—HCl—H_2O—Tributyl Phosphate. 259-265B
Acidic Rate- and Flow-Controlled Dissolution of Uraninite Ores. 405-413B

Acid pickling
See Pickling

Actinide metals
See Uranium

Activated sintering
The Effect of the Binder Phase Melting Temperature on Enhanced Sintering. 903-906A

Activity (chemical)
Measurements of Oxygen Pressure in a Copper Flash Smelting Furnace by an EMF Method. 111-117B
Activity Coefficient of Oxygen in Copper—Tellurium Melts. 171-177B
Activity of Arsenic in Molten Lead. 235-238B
Arsenic Activities in Molten Copper and Copper Sulfide Melts. 755-761B
A Modified Interaction Parameter Formalism for Non-Dilute Solutions. 1211-1215A
An Ambiguity in the Definition of the Activity Coefficient at Infinite Dilution. 1484-1485A

Activity coefficients
See Activity (chemical)

Additives
See Master alloys

Adsorption
Potentiometric Studies on the Adsorption of $Au(CN)_2^-$ and $Ag(CN)_2^-$ Onto Activated Carbon. 523-528B
Studies on Role of Oxygen in the Adsorption of $Au(CN)_2^-$ and $Ag(CN)_2^-$ Onto Activated Carbon. 529-533B

Age hardening
See Precipitation hardening

Agglomerating
See Agglomeration

Agglomeration
Agglomeration of Particles During Roasting of Zinc Sulfide Concentrates. 647-656B

Aggregation
See Agglomeration

Aging
See also Aging (artificial)
Strain aging
Transformation Sequence in a Cu—Al—Ni Shape Memory Alloy at Elevated Temperatures. 65-72A

Aging (artificial)
The Kinetics of Carbide Precipitation in Silicon—Aluminum Steels. 1287-1294A

Agitation
See Electromagnetic stirring

Air gaps
The Air-Gap Formation Process at the Casting/Mold Interface and the Heat Transfer Mechanism Through the Gap. 833-844B

Air pollution
Theoretical and Experimental Study of the Removal of Dust Particles From Flue Gases Using Two-Phase Steam—Water Droplet Mixtures. 665-676B
Removal of SO_2 With Oxygen in the Presence of Fe(III). 745-753B

Aircomatic welding
See Gas metal arc welding

Aircraft components, Materials substitution
Mechanical Properties and Microstructure of Al—Li—Cu—Mg—Zr Die Forgings. 2007-2016A

Aircraft equipment
See Aircraft components

Alfven waves
See Magnetohydrodynamics

Alkali metal alloys
See Lithium base alloys

Alkali metals
See Cesium
Lithium
Potassium

Alkaline earth metal alloys
See Magnesium base alloys
Strontium

Alkaline earth metal compounds
See also Lime

Alkaline earth metal compounds, Thermal properties
Legendre Polynomial Expansions of Thermodynamic Properties of Binary Solutions. 1057-1063A

Alkaline earth metals
See Calcium
Magnesium
Strontium

Allotropic transformation
The β-to-α Phase Transformation in a Uranium Alloy. 1717-1723A

Allotropic transformation, Size effects
The Alpha $\rightleftarrows$ Gamma Transformation in Iron Powders. 37-44A

Alloy cast iron
See Chromium iron

Alloy powders, Microstructure
Microstructural Characterization of Rapidly Solidified Al—Li—Co Powders. 73-91A
Microstructure and Stability of Melt Spun Inconel 713LC. 173-180A
An Analysis of the Microstructure of Rapidly Solidified Al—8Fe Powder. 781-790A
Dendritic Microstructure in Argon Atomized Superalloy Powders. 2099-2102A

Alloy steels
See also Austenitic stainless steels
Boron steels
Carbon manganese steels
Chromium molybdenum steels
Chromium molybdenum vanadium steels
Chromium steels
Duplex stainless steels
Electrical steels
Ferritic stainless steels
High strength low alloy steels
High strength steels
Low alloy steels
Manganese steels
Molybdenum steels
Nickel chromium molybdenum steels
Nickel chromium steels
Nickel steels
Resulfurized steels
Silicon manganese steels
Silicon steels
Stainless steels
Vanadium steels

Alloy steels, Mechanical properties
New Considerations on Tempered Martensite Embrittlement. 745-746A

Alloying elements, Diffusion
Measurement of Segregation and Distribution Coefficients in MAR-M200 and Hafnium-Modified MAR-M200 Superalloys. 419-428A

Alloys
See Alloy steels
Casting alloys
Dispersion hardening alloys
Ferrous alloys
Magnetic alloys
Master alloys
Precipitation hardening alloys
Superalloys

Alpha annealing
See Annealing

Alphatizing
See Annealing

Alumina
See Aluminum oxide

Aluminizing
CVD Aluminide Nickel. 215-220A

Aluminum, Alloying elements
Directional Solidification and Annealing of $Mn_{55}Al_{45}$ Alloys. 1247-1249A
Effect of Aluminum Content on Low Temperature Tensile Properties in Cryogenic Fe/Mn/Al/Nb/C Steels. 2097-2098A

Aluminum, Binary systems
The Aluminum—Strontium Phase Diagram. 1250-1253A

Aluminum, Crystal lattices
Serrated Grain Boundary Formation During High Temperature Fatigue. 1100-1102A

Aluminum, Extraction
On the Separation of $TiCl_4$ From $AlCl_3$. 232-234B
Extraction Equilibria in the System $GaCl_3$—$AlCl_3$—HCl—H_2O—Tributyl Phosphate. 259-265B
Electrocapillarity in the Aluminum Reduction Cell. 547-552B
The Vapor—Liquid Equilibria of the Aluminum Chloride—Titanium Tetrachloride System. 609-610B

Aluminum, Microstructure
Deformation and Recrystallization Textures in Commercially Pure Aluminum. 253-259A

Aluminum, Reactions (chemical)
Solubility and Activity of Oxygen in Liquid Nickel in Equilibrium With α-Al_2O_3 and NiO x (1 + x)Al_2O_3. 763-770B

Aluminum, Solubility
Alloying Behavior of Co_3Ti. 1433-1439A

Aluminum, Ternary systems
Discussion of "The Grain Refining of Aluminum and Phase Relationships in the Al—Ti—B System" and Reply. 349-351A

Aluminum base alloys, Casting
Numerical Simulation of Solidification in an Aluminum Casting. 209-216B
The Air-Gap Formation Process at the Casting/Mold Interface and the Heat Transfer Mechanism Through the Gap. 833-844B
Development of Al—Ti—C Grain Refiners Containing TiC. 2127-2137A

Aluminum base alloys, Composite materials
An *In Situ* HVEM Study of Dislocation Generation at Al/SiC Interfaces in Metal Matrix Composites. 379-389A
The Effect of Thermal Exposure on the Microstructure and Fiber/Matrix Interface of an Al_2O_3/Al Composite. 1075-1080A
Structure-Performance Maps of Polymeric, Metal, and Ceramic Matrix Composites. 1547-1559A

Aluminum base alloys, Corrosion
The Effect of Cathodic Polarization on the Corrosion Fatigue Behavior of a Precipitation Hardened Aluminum Alloy. 339-347A
Effect of Notch Root Radius on Stress Intensity in Mode I and Mode III Loading. 1633-1637A

Aluminum base alloys, Diffusion
The Effect of Solidification Rate on Microsegregation. 2063-2073A

Aluminum base alloys, Heat treatment
Lithium Depletion During Heat Treatment of Aluminum—Lithium Alloys. 635-643A

Aluminum base alloys, Mechanical properties
Unloading Yield Effects in Aluminum Alloys. 121-126A
Correlation Between Creep Stess Exponent and Ductility in Al—10 At.% Zn. 365-366A
Dependence of Total Elongations of Superplastic Materials on m. 685-690A
Tensile Properties of Directionally Solidified Al—4Cu Alloys With Columnar and Equiaxed Grains. 823-832A
Influence of Soaking Treatments on Hot Ductility of Al—4.85Mg Alloys Containing Manganese. 833-841A
Fatigue Crack Growth and Fracture Toughness Behavior of an Al—Li—Cu Alloy. 1011-1026A
Rolling Contact Deformation of 1100 Aluminum Disks. 1561-1572A
The Influence of Load Ratio on Fatigue Crack Growth in 7090-T6 and IN9021-T4 P/M Aluminum Alloys. 1787-1795A
The Effect of Hot-Rolling on Chill-Cast Al—Al_3Ni, Chill-Cast Al—Al_2Cu, and Unidirectionally Solidified Al—Al_3Ni Eutectic Alloys. 1985-1993A
Mechanical Properties and Microstructure of Al—Li—Cu—Mg—Zr Die Forgings. 2007-2016A
Characterization and Modeling of the High Temperature Flow Behavior of Aluminum Alloy 2024. 2227-2237A

Aluminum base alloys, Metal working
On the Directionality of Strain Localization When Stretching Aluminum Alloy Sheets in Biaxial Tension. 367-370A

Aluminum base alloys, Microstructure
The Influence of Iron and Chromium on the Microstructure of Cast Al—Si—Mg Alloys. 45-52A
Microstructural Characterization of Rapidly Solidified Al—Li—Co Powders. 73-91A

Aluminum base alloys, Phases (state of matter)
The Aluminum—Strontium Phase Diagram. 1250-1253A
Compositional Analysis of the Icosahedral Phase in Rapidly Quenched Al—Mn and Al—V Alloys. 1657-1664A
On the Microstructure of Rapidly Solidified Al—15Mn Ribbons: Effect of Annealing in the Temperature Range 300-600°C. 1671-1683A
Icosahedral and Decagonal Phase Formation in Al—Mn Alloys. 2117-2125A
Growth of Silicon Particles in an Aluminum Matrix. 2139-2152A

Aluminum base alloys, Powder technology
An Analysis of the Microstructure of Rapidly Solidified Al—8Fe Powder. 781-790A

Aluminum base alloys, Structural hardening
Metallographic and Differential Scanning Calorimetry Analyses of Precipitation and Recrystallization in an Al—Mn Alloy. 593-605A
Decomposition Characteristics of Al—Mn—Zr Alloys Rapidly-Quenched From the Melt. 799-806A
Superplasticity in a Thermomechanically Processed High-Magnesium, Al—Mg Alloy. 1035-1041A
The Influence of Thermomechanical Processing Variables on Superplasticity in a High-Magnesium, Al—Mg Alloy. 1043-1050A
Precipitation and Ostwald Ripening in Dilute Aluminum Base-Zr—V Alloys. 2187-2198A

Aluminum base alloys, Welding
Three-Dimensional Convection in Laser Melted Pools. 2265-2270A
Computer Simulation of Convection in Moving Arc Weld Pools. 2271-2277A

Aluminum compounds
See also Aluminum oxide

Aluminum compounds, Crystal lattices
$L1_2$-Type Ni—Al—Cr Alloys Processed by Rapid Solidification. 1685-1692A

Aluminum compounds, Diffusion
Carbon Segregation to Grain Boundaries in Rapidly Solidified Ni_3Al. 2084-2086A

Aluminum compounds, Mechanical properties
Fracture of Fe_3Al. 2298-2300A

Aluminum killed steels, Mechanical properties
Flow Behavior of an Aluminum-Killed Steel After Tensile Prestraining and Strain-Aging. 1573-1575A

Aluminum killed steels, Phase transformations
The Dissolution of Cementite in a Low Carbon Steel During Isothermal Annealing at 700°C. 617-620A

Aluminum oxide, Composite materials
The Effect of Thermal Exposure on the Microstructure and Fiber/Matrix Interface of an Al_2O_3/Al Composite. 1075-1080A

Ambient pressure
See Pressure

Amorphous materials
See Metallic glasses

Analyzing
See Depth profiling
Differential thermal analysis
Mathematical analysis
Numerical analysis
Stress analysis

Androforming
See Stretch forming

Anisotropy
A Model for Yielding in Anisotropic Metals. 107-114A

Annealing
See also Homogenizing
Isothermal annealing
Spheroidizing
Factors Affecting the Final Grain Size of Decarburized Lamination Steels. 1277-1285A
The Study of Desulfurization Kinetics in Grain Oriented 3% Silicon Iron. 1347-1351A

Antimony, Impurities
A Kinetic Model for the Vacuum Refining of Inductively Stirred Copper Melts. 87-103B
Thermodynamics of Gaseous SbS. 913-914B

Arc discharges
See Electric arcs

Arc plasma welding
See Plasma arc welding

Arc welding
See also Gas metal arc welding
Gas tungsten arc welding
Plasma arc welding
Submerged arc welding
Computer Modeling of Heat Flow in Welds. 587-600B
Computer Simulation of Convection in Moving Arc Weld Pools. 2271-2277A

Arc welds
See Welded joints

Arcs (electric)
See Electric arcs

Argon arc welding
See Gas tungsten arc welding

Armor, Microstructure
Microstructural Analysis of Residual Projectiles—a New Method to Explain Penetration Mechanisms. 435-442A

Armor plate
See Armor

Arsenic, Binary systems
Activity of Arsenic in Molten Lead. 235-238B

Arsenic, Impurities
A Kinetic Model for the Vacuum Refining of Inductively Stirred Copper Melts. 87-103B
Arsenic Activities in Molten Copper and Copper Sulfide Melts. 755-761B

Artificial aging
See Aging (artificial)

Artillery shells
See Projectiles

Atmospheric pollution
See Air pollution

Atomic diffusion
See Diffusion

Atomization
See Atomizing

Atomizing
Dendritic Microstructure in Argon Atomized Superalloy Powders. 2099-2102A

Austenite
See also Retained austenite

Austenite, Chemical analysis
The Chemical Composition of Precipitated Austenite in 9Ni Steel. 967-972A

Austenite, Diffusion
Determination of the Interdiffusion Coefficients in the Fe—Ni and Fe—Ni—P Systems Below 900°C. 1131-1138A

Austenitic stainless steels, Corrosion
Dissolution Behavior of 304 Stainless Steel in HNO_3/HF Mixtures. 137-149A

High Temperature Corrosion of Superalloys in an Environment Containing Both Oxygen and Chlorine. 1087-1094A
Liquid Cesium Tellurium-Induced Fatigue Embrittlement of Cold-Worked 316 Stainless Steel. 2090-2093A

Austenitic stainless steels, Crystal lattices
Changes in the Subboundary Mesh Size With Creep Strain in 304 Stainless Steel. 2093-2097A

Austenitic stainless steels, Mechanical properties
Influence of Prestrain History on Fracture Toughness Properties of Steels. 473-489A
Low Temperature Impact Properties of Phosphorus and Sulfur Doped and Sensitized Type 304 Stainless Steel. 663-668A

Austenitic stainless steels, Microstructure
On the Kinetics of the Spreading of Extrinsic Grain Boundary Dislocations. 1967-1975A

Austenitic stainless steels, Oxidation
Stability of the Chromia Layer on Steels in Flowing Nonequilibrium H_2—H_2O—CH_4—CO Mixtures at 950°C. 915-921A

Austenitic stainless steels, Phase transformations
Phase Transformation of Austenitic Stainless Steels as a Result of Cathodic Hydrogen Charging. 1593-1600A

Austenitic stainless steels, Structural hardening
Strain Aging and Load Relaxation Behavior of Type 316 Stainless Steel at Room Temperature. 1757-1767A

Austenitic stainless steels, Welding
Solidification and Solidification Cracking in Nitrogen-Strengthened Austenitic Stainless Steels. 727-737A
Metal Vapors in Gas Tungsten Arcs. I. Spectroscopy and Monochromatic Photography. 1851-1863A
Metal Vapors in Gas Tungsten Arcs. II. Theoretical Calculations of Transport Properties. 1865-1871A

Austenitizing
Retained Carbide Distribution in Intercritically Austenitized 52100 Steel. 31-36A

Auto oxidation
See Oxidation

Autodiffusion
See Diffusion

Autogenous smelting
See Flash smelting

A15 compounds, Mechanical properties
High-Temperature Plastic Deformation of Two V—Ga Alloys With A15 Structure. 519-525A

A15 compounds, Superconductivity
The Effect of High Temperature Plastic Flow on the Superconducting Transition in A15 Compounds. 399-405A

Bacterial corrosion
Biotechnology/Materials: the Growing Interface. 5-30A

Bacterial leaching
Biotechnology/Materials: the Growing Interface. 5-30A

Bainite, Crystal growth
Discussion of "The Bainite Reaction in Fe—Si—C Alloys: the Primary Stage" and "The Bainite Reaction in Fe—Si—C Alloys: the Secondary Stage". 1095-1100A
Lower Bainite With Midrib in Hypereutectoid Steels. 1113-1120A

Ball mills
An Analysis of Radial Segregation for Different Sized Spherical Solids in Rotary Cylinders. 247-257B

Balling
See Agglomeration

Basic converters
Theoretical and Experimental Study of the Removal of Dust Particles From Flue Gases Using Two-Phase Steam—Water Droplet Mixtures. 665-676B
Soda Slag System for Hot Metal Dephosphorization. 797-804B

Basic electric furnaces
See Electric furnaces

Basic oxygen furnaces
See Basic converters

Basic oxygen processes
See Oxygen steel making

Basic oxygen steel making
See Oxygen steel making

Batch type furnaces
See Basic converters
Bottom blown converters
Copper converters
Rotary converters
Top blown converters
Vacuum arc furnaces

Bauschinger effect
Grain Boundary Contribution to the Bauschinger Effect in β-Brass Bicrystals. 2017-2029A

BCC metals, Diffusion
On the Effective Hydrogen Permeability in Metastable β Titanium Alloy, Niobium and 2.25Cr—1Mo Ferritic Steel. 2086-2090A

Bearing steels, Heat treatment
Retained Carbide Distribution in Intercritically Austenitized 52100 Steel. 31-36A

Beehive kilns
See Kilns

Bendability
See Formability

Beryllium bronzes, Phase transformations
Martensitic Transformation of Cu—2Be Alloys Induced by Explosive Cladding. 1885-1890A

Beryllium copper
See Beryllium bronzes

Binary systems
A Modified Regular-Solution Model for Terminal Solutions. 1878-1879A

Binary systems, Phases (state of matter)
A Theoretical Evaluation of Chemical Ordering and Glass Transition in Liquid Mg—Sn Alloys. 607-615A
Study of the Enthalpies of Formation in the Gd—Ni System. 777-780A
Thermodynamics of the Mn—P System. 777-783B
An HVEM Study of an Unusual Ordering Reaction in Platinum—Carbon. 807-814A
Effect of Small Additions of Silver on the Eutectic Temperature in the Lead—Tin System. 829-832B
The Aluminum—Strontium Phase Diagram. 1250-1253A
Magnetic Contributions to the Thermodynamic Functions of Alloys and the Phase Equilibria of Fe—Ni System Below 1200K. 1361-1372A
A Thermodynamic Analysis of the Phase Equilibria of the Fe—Ni System Above 1200K. 1373-1380A
Direct Use of the Chemical Potential Function in Thermodynamic Modeling of Alloy Phase Diagrams. 1471-1477A
The Vanadium—Nitrogen System: a Review. 1647-1656A

Binary systems, Thermal properties
Calorimetric and Emf Studies on Liquid Li—Sn Alloys. 791-796B

Biochemistry
Biotechnology/Materials: the Growing Interface. 5-30A

Bismuth, Impurities
A Kinetic Model for the Vacuum Refining of Inductively Stirred Copper Melts. 87-103B

Bismuth, Physical properties
Interfacial Tension and Flotation Characteristics of Liquid Metal—Sodium Flux Systems. 339-346B

Blades
See Turbine blades

Blast furnace chemistry
Structural Effects in the Reaction Between Carbon Dioxide and Coke Doped With Various Potassium Bearing Catalytic Precursors. 565-574B
Reduction of Lead Minerals by CO/CO_2 Gas Mixtures: Application of the Grain Model. 575-586B
An Investigation of the Critical Influence of Potassium on the Reduction of Wustite. 657-663B

Blast furnace practice
Development of an Analytical Equation for Calculation of the Blast Furnace Fuel Rate. 705-724B

Blast furnace slags
The Reaction of SiO(g) With Liquid Slags. 397-399B

Blast furnace slags, Solubility
PbO Solubility in Lead-Blast Furnace Slags. 817-827B

Blast furnaces
The Settling of Metallic Lead From Lead Blast Furnace Slag. 267-270B

Blowholes
An Ice-Water Model Study on Formation of Blowhole-Free Skin With Reference to Solidification of Steel. 553-564B

Blowing
A Multi-Phase Model for Plumes in Powder Injection Refining Processes. 77-85B
Heat Flow in Copper Converters. 677-685B
Mixing Models for Gas Stirred Metallurgical Reactors. 725-733B

Blunging
See Mixing

Body centered cubic metals
See BCC metals

BOF
See Basic converters

Boiling water reactors
Relative Stress Corrosion Susceptibilities of Alloys 690 and 600 in Simulated Boiling Water Reactor Environments. 877-887A

Bonding
See Explosive bonding

Bonding strength
A Relationship Between Indigenous Impurity Elements and Protective Oxide Scale Adherence Characteristics. 923-932A

Boron, Alloying additive
The Microstructure and Mechanical Properties of a Modified 2.25Cr—1Mo Steel. 1027-1034A
Effects of Decarburization and Normalizing Heat Treatment in Boron-Silicon Iron Alloys. 1353-1359A

Boron, Diffusion
Carbon Segregation to Grain Boundaries in Rapidly Solidified Ni_3Al. 2084-2086A

Boron, Solubility
The Solubility of Boron in Iron. 1481-1483A

Boron, Ternary systems
Discussion of "The Grain Refining of Aluminum and Phase Relationships in the Al—Ti—B System" and Reply. 349-351A
Balance of Distribution of Some Transition Metals Between the (M', M")B and (M', M")$_2$B Phases. 1665-1669A

Boron intensified steels
See Boron steels

Boron steels, Welding
A Comparative Study of the Heat Affected Zone (HAZ) Properties of Boron Containing Low Carbon Steels. 1529-1536A

BOS process
See Oxygen steel making

Bottom blown converters
Model Study of Mixing and Mass Transfer Rates of Slag-Metal in Top and Bottom Blown Converters. 461-469B
Mixing Models for Gas Stirred Metallurgical Reactors. 725-733B

Boundaries
See Grain boundaries
Grain sub boundaries

Brasses, Corrosion
Further Observations of SCC in α—β Brass: Considerations Regarding the Appearance of Crack Arrest Markings During SCC. 1081-1086A

Brasses, Crystal lattices
Deformation of Martensite in a Polycrystalline Cu—Zn—Al Alloy. 945-959A

Brasses, Mechanical properties
Grain Boundary Contribution to the Bauschinger Effect in β-Brass Bicrystals. 2017-2029A

Brasses, Metal working
Effect of Stress—Strain-Law Transients on Formability. 1001-1009A

Brasses, Metallography
Modulated Microstructures in β Cu—Zn—Al. 2153-2161A

Brasses, Phase transformations
Microstructural Effects of Martensitic Transformation Cycling of a Cu—Zn—Al Alloy: Vestigial Structures in the Parent Phase. 195-203A

Brazing
See Vacuum brazing

Brick kilns
See Kilns

Brittle fracture
Size Effects on the Microscopic Cleavage Stress, σ_F^*, in Martensitic Microstructures. 231-241A
Fracture Behavior in Medium-Carbon Martensitic Silicon- and Nickel-Steels. 1173-1178A
Hydrogen-Induced Subcritical Crack Growth of a 12Cr—1Mo Ferritic Stainless Steel. 1229-1240A

Brittleness
See also Temper brittleness
Fracture of Fe_3Al. 2298-2300A

Bromides, Thermal properties
Legendre Polynomial Expansions of Thermodynamic Properties of Binary Solutions. 1057-1063A

Bronzes
See Beryllium bronzes

Bullets
See Projectiles

Burdening
See Blast furnace practice

Cadmium base alloys, Crystal growth
Nonlinear Regression Analysis of Superimposed DSC Crystallization Peaks. 1479-1481A

Caesium
See Cesium

Calcining
See Roasting

Calcium, Diffusion
Measurement of Tracer Diffusivities of Ca^{45} and Fe^{59} in *Silica Saturated FeO—CaO—SiO_2 Melts With the Porous* Frit Technique. 497-501B

Calcium, Impurities
The Gaseous Reduction of Solid Calciowustites in CO/CO_2 and H/H_2O Gas Mixtures. 375-381B
The Effect of Sulfur on the Gaseous Reduction of Solid *Calciowustites.* 383-393B

Calcium compounds
See Lime

Calcium oxide
See Lime

Calorimeters
A Straightforward New Procedure for Determining Crystallization Kinetics by Heating Rate DSC. 561-566A

Calorimetry
Nonlinear Regression Analysis of Superimposed DSC Crystallization Peaks. 1479-1481A

Capillarity
An Analysis of the Surface Menisci in a Mixture of Liquid and Deformable Grains. 325-330A

Capillary tubes
Experimental Studies on Drop Formation at the Tip of Melting Rods. 471-477B

Carbides
See also Silicon carbide
Tungsten carbide
Retained Carbide Distribution in Intercritically Austenitized 52100 Steel. 31-36A

Carbides, Composition effects
Influence of Alloy Chemistry on Carbide Precipitation in a Nickel Base Superalloy. 2075-2077A

Carbides, Crystal growth
Thermodynamics of the Fe—Mo—C System at 985K. 391-398A
The Microstructure and Mechanical Properties of a Modified 2.25Cr—1Mo Steel. 1027-1034A
Discussion of "The Bainite Reaction in Fe—Si—C Alloys: the Primary Stage" and "The Bainite Reaction in Fe—Si—C Alloys: the Secondary Stage". 1095-1100A
Microstructure—Mechanical Property Relationships in Isothermally Transformed Vanadium Steels. 1191-1202A
The Kinetics of Carbide Precipitation in Silicon—Aluminum Steels. 1287-1294A

Carbides, Thermal properties
Thermodynamic Properties of Carbides in 2.25Cr—1Mo Steel at 985K. 1585-1592A
Gibbs Free Energies of Formation of Molybdenum Carbide and Tungsten Carbide From 1173-1573K. 2031-2034A

Carbon, Alloying additive
On the Microstructure and Mechanical Behavior of Melt-Spun Fe—24Ni—0.5C Ribbons: Effect of Austenite Grain Size. 127-136A
Dendritic Microstructure in Argon Atomized Superalloy Powders. 2099-2102A

Carbon, Binary systems
An HVEM Study of an Unusual Ordering Reaction in Platinum—Carbon. 807-814A

Carbon, Diffusion
A Simplified Treatment of Carbon Diffusion in Compound Welds Having an Intermediate Layer. 2083-2084A
Carbon Segregation to Grain Boundaries in Rapidly Solidified Ni_3Al. 2084-2086A

Carbon, Impurities
The Effects of Interstitials and Hydrogen-Interstitial Interactions on Low Temperature Hardening and Embrittlement in Vanadium, Niobium, and Tantalum. 1179-1189A

Carbon, Quaternary systems
Phase Relationships in the Iron-Rich Fe—Cr—Ni—C System at Solidification Temperatures. 1461-1469A

Carbon, Quinary systems
Phase Relationships in the Fe—Cr—Mn—Ni—C System at Solidification Temperatures. 1825-1835A

Carbon, Reactions (chemical)
Reduction of Phosphate Ore by Carbon. II. Rate Limiting Steps. 869-877B

Carbon, Solubility
Thermodynamics of the Fe—Mo—C System at 985K. 391-398A
Thermotransport of Carbon in Two-Phase V—C and Nb—C Alloys. 1955-1966A

Carbon, Sorption
Potentiometric Studies on the Adsorption of $Au(CN)_2^-$ and $Ag(CN)_2^-$ Onto Activated Carbon. 523-528B
Studies on Role of Oxygen in the Adsorption of $Au(CN)_2^-$ and $Ag(CN)_2^-$ Onto Activated Carbon. 529-533B

Carbon, Ternary systems
Thermodynamics of the Fe—Mo—C System at 985K. 391-398A
Thermodynamics of the Si—C—O System for the Production of Silicon Carbide and Metallic Silicon. 503-514B
Direct Use of the Chemical Potential Function in Thermodynamic Modeling of Alloy Phase Diagrams. 1471-1477A

Carbon compounds
See Carbides
Carbon dioxide
Carbon monoxide
Tungsten carbide

Carbon dioxide, Reactions (chemical)
Interfacial Rates of Reaction of CO_2 With Liquid Iron Silicates, Silica-Saturated Manganese Silicates, and Some Calcium Iron Silicates. 307-316B
Structural Effects in the Reaction Between Carbon Dioxide and Coke Doped With Various Potassium Bearing Catalytic Precursors. 565-574B
*Reduction of Lead Minerals by CO/CO_2 Gas Mixtures: Appli*cation of the Grain Model. 575-586B
Reactions of Fe—Cr and Ni—Cr Alloys in CO/CO_2 Gases at *850 and 950°C.* 1065-1074A

Carbon manganese steels, Corrosion
A Study of the Hydrogen-Induced Degradation of Two Steels *Differing in Sulfur Content.* 2255-2263A

Carbon manganese steels, Mechanical properties
High Temperature Ductility Loss in Carbon—Manganese and Niobium-Treated Steels. 1995-2006A

Carbon manganese steels, Welding
A Model for the Silicon—Manganese Deoxidation of Steel Weld Metals. 1797-1807A

Carbon monoxide, Reactions (chemical)
Reduction of Lead Minerals by CO/CO_2 Gas Mixtures: Application of the Grain Model. 575-586B
Reactions of Fe—Cr and Ni—Cr Alloys in CO/CO_2 Gases at *850 and 950°C.* 1065-1074A

Carbon steels
See also Aluminum killed steels
Carbon manganese steels

Carbon steels, Crystal growth
Effect of Copper Precipitation on the Development of Recrystallization Textures Through Continuous Annealing of Low-Carbon Sheet Steel. 621-633A
Lower Bainite With Midrib in Hypereutectoid Steels. 1113-1120A
Grain Growth in Capped Steel. 1907-1913A

Carbon steels, Diffusion
Analysis of Solute Distribution in Dendrites of Carbon Steel With δ/γ Transformation During Solidification. 845-859B

Carbon steels, Mechanical properties
A Model for Yielding in Anisotropic Metals. 107-114A
Effects of the Prior Austenite Grain Size on the Ductility of Fully Pearlitic Eutectoid Steel. 461-472A
Hydrogen Degradation of Spheroidized AISI 1020 Steel. 1485-1487A
Instabilities During Tension of Thin Voided Viscoplastic Sheets. 1637-1640A
Microstructural Effects on the Cleavage Fracture Stress of Fully Pearlitic Eutectoid Steel. 1769-1786A

Carbon steels, Metal working
Effect of Stress—Strain-Law Transients on Formability. 1001-1009A

Carbon steels, Phase transformations
The Dissolution of Cementite in a Low Carbon Steel During Isothermal Annealing at 700°C. 617-620A
The Kinetics of Ferrite Nucleation at Austenite Grain Edges in Fe—C and Fe—C—X Alloys. 1399-1407A

Carbon steels, Phases (state of matter)
Development of Ferrous Laminated Composites With Unique Microstructures by Control of Carbon Diffusion. 1517-1527A

Carbon steels, Welding
The Diffusion Bonding of Zr—2.5Nb to Steel. 429-434A

Carbothermic reactions
Application of Thermodynamic and Kinetic Principles in the Reduction of Metal Oxides by Carbon in a Plasma Environment. 197-207B

Carburization
See Carburizing

Carburization (corrosion)
Stability of the Chromia Layer on Steels in Flowing Nonequilibrium $H_2—H_2O—CH_4—CO$ Mixtures at 950°C. 915-921A

Carburizing
Reactions of Fe—Cr and Ni—Cr Alloys in CO/CO_2 Gases at 850 and 950°C. 1065-1074A

Carrier concentration
See Carrier density

Carrier density
Thermodynamic Properties and Defect Structure of Semiconducting Compound Phases: Tin Telluride. 1241-1245A

Case carburizing
See Carburizing

Case hardening
See Carburizing

Cast iron
See also Chromium iron
Nodular iron

Cast iron, Casting
Heat and Moisture Transfer in Sand Molds Containing Water. 903-911B

Cast iron, Crystal growth
Misra Technique Applied to Solidification of Cast Iron. 358-360A
Microstructural Variations Induced by Gravity Level During Directional Solidification of Near-Eutectic Iron—Carbon Type Alloys. 1121-1130A

Cast iron, Mechanical properties
The Interaction of Hydrogen With the Interface of Al_2O_3 Particles in Iron. 2183-2186A

Casting
See Continuous casting
Ingot casting
Melt spinning
Permanent mold casting
Rheocasting
Sand casting

Casting alloys, Microstructure
The Influence of Iron and Chromium on the Microstructure of *Cast Al—Si—Mg Alloys.* 45-52A

Casting defects
See also Blowholes
An Ice-Water Model Study on Formation of Blowhole-Free Skin With Reference to Solidification of Steel. 553-564B
The Air-Gap Formation Process at the Casting/Mold Interface and the Heat Transfer Mechanism Through the Gap. 833-844B

Castings
See also Continuous cast shapes

Castings, Crystal growth
Numerical Simulation of Solidification in an Aluminum Casting. 209-216B

Cathodic coatings (oxide)
See Oxide coatings

Cathodic polarization
The Effect of Cathodic Polarization on the Corrosion Fatigue Behavior of a Precipitation Hardened *Aluminum Alloy.* 339-347A

Cavitation
Superplasticity in a Thermomechanically Processed High-*Magnesium, Al—Mg Alloy.* 1035-1041A
The Influence of Thermomechanical Processing Variables on Superplasticity in a High-Magnesium, Al—Mg Alloy. 1043-1050A

Cells
See Electrolytic cells

Cementite
The Dissolution of Cementite in a Low Carbon Steel During Isothermal Annealing at 700°C. 617-620A

Cerium, Chemical analysis
Research on Determination of the Rare-Earth Content in Metal Phases of Steel. 315-323A

Cesium, Environment
Liquid Cesium Tellurium-Induced Fatigue Embrittlement of Cold-Worked 316 Stainless Steel. 2090-2093A

CGF forging process
See Forging

Chalcocite, Reduction (chemical)
Lime-Enhanced Reduction of Sulfide Concentrates: a Thermodynamic Discussion. 185-196B

Chalcogenides
See Sulfides
Tellurides

Chalcopyrite, Reduction (chemical)
The Leaching of Chalcopyrite With Ferric Chloride. 19-28B
Intrinsic Kinetics of the Oxidation of Chalcopyrite Particles Under Isothermal and Nonisothermal Conditions. 51-60B
Lime-Enhanced Reduction of Sulfide Concentrates: a Thermodynamic Discussion. 185-196B
Discussion of "Lime-Enhanced Reduction of Sulfide Concentrates: a Thermodynamic Discussion" and Authors' Reply. 914-918B

Chemical analysis
See Depth profiling

Chemical attack
See Preferential attack (corrosion)

Chemical cleaning
See Pickling

Chemical kinetics
See Reaction kinetics

Chemical properties
See Heat of formation

Chemical tests
See Depth profiling

Chemistry
See Biochemistry
Physical chemistry
Surface chemistry
Thermochemistry

Chlorides, Environment
High Temperature Corrosion of Superalloys in an Environment Containing Both Oxygen and Chlorine. 1087-1094A

Chlorides, Refining
The Vapor—Liquid Equilibria of the Aluminum Chloride—Titanium Tetrachloride System. 609-610B

Chlorides, Synthesis
On the Separation of $TiCl_4$ From $AlCl_3$. 232-234B

Chlorides, Thermal properties
Legendre Polynomial Expansions of Thermodynamic Properties of Binary Solutions. 1057-1063A

Chlorination
The Formation of Volatile Corrosion Products During the Mixed Oxidation—Chlorination of Cobalt at 650°C. 1223-1228A

Chlorine
Leaching Kinetics of Natural Cobalt Triarsenide in Chlorine Solutions. 629-637B

Chromium, Alloying additive
The Influence of Iron and Chromium on the Microstructure of *Cast Al—Si—Mg Alloys.* *45-52A*
$L1_2$-Type Ni—Al—Cr Alloys Processed by Rapid Solidification. 1685-1692A

Chromium, Alloying elements
The Kinetics of the Nitrogen Reaction With Liquid Iron—Chromium Alloys. 317-322B
Comparison of Solution Models for Nonmetallic Solutes in Binary Liquid Alloys: Nitrogen in Fe—Cr and Fe—Ni. 785-789B
Roles of Dislocations and Grain Boundaries in Martensite Nucleation. *1693-1702A*

Chromium, Diffusion
Interdiffusion in the Ni—Cr—Co—Mo System at 1300°C. 983-990A

Chromium, Extraction
Application of Thermodynamic and Kinetic Principles in the Reduction of Metal Oxides by Carbon in a Plasma Environment. 197-207B

Chromium, Quaternary systems
Phase Relationships in the Iron-Rich Fe—Cr—Ni—C System at Solidification Temperatures. 1461-1469A

Chromium, Quinary systems
Phase Relationships in the Fe—Cr—Mn—Ni—C System at Solidification Temperatures. 1825-1835A

Chromium, Solubility
Alloying Behavior of Co_3Ti. 1433-1439A

Chromium, Ternary systems
Direct Use of the Chemical Potential Function in Thermodynamic Modeling of Alloy Phase Diagrams. 1471-1477A

Balance of Distribution of Some Transition Metals Between the (M', M")B and (M', M")$_2$B Phases. 1665-1669A

Chromium compounds, Thermal properties
Standard Enthalpies of Formation of $TiSi_2$ and VSi_2 by High-Temperature Calorimetry. 1217-1221A

Chromium iron, Mechanical properties
Microstructure and Creep Behavior of a Niobium Alloyed Cast Heat-Resistant 26% Chromium Steel. 691-696A

Chromium molybdenum nickel steels
See Nickel chromium molybdenum steels

Chromium molybdenum steels
See also Chromium molybdenum vanadium steels
Nickel chromium molybdenum steels

Chromium molybdenum steels, Corrosion
Sulfide Stress Cracking Susceptibility of Nickel Containing Steels. 1601-1610A

Chromium molybdenum steels, Diffusion
On the Effective Hydrogen Permeability in Metastable β Titanium Alloy, Niobium and 2.25Cr—1Mo Ferritic Steel. 2086-2090A

Chromium molybdenum steels, Mechanical properties
Wear Resistance of Quenched and Tempered AISI 4137H Steel. 295-306A
Dependence of Total Elongations of Superplastic Materials on m. 685-690A
The Microstructure and Mechanical Properties of a Modified 2.25Cr—1Mo Steel. 1027-1034A
*Effect of Microstructure on Strength and Toughness of Heat-*Treated Low Alloy Structural Steels. 1203-1209A

Chromium molybdenum steels, Phases (state of matter)
Thermodynamic Properties of Carbides in 2.25Cr—1Mo Steel at 985K. 1585-1592A

Chromium molybdenum steels, Structural hardening
Effect of Tempering Temperature on the Work-Hardening Rate of Five HSLA Steels. 307-313A

Chromium molybdenum vanadium steels, Mechanical properties
Dependence of Total Elongations of Superplastic Materials on m. 685-690A

Chromium nickel molybdenum steels
See Nickel chromium molybdenum steels

Chromium nickel steels
See Nickel chromium steels

Chromium ores, Reduction (chemical)
Application of Thermodynamic and Kinetic Principles in the *Reduction of Metal Oxides by Carbon in a Plasma Environ*ment. 197-207B

Chromium steels
See also Austenitic stainless steels
Chromium molybdenum steels
Chromium molybdenum vanadium steels
Duplex stainless steels
Ferritic stainless steels
Nickel chromium molybdenum steels
Nickel chromium steels
Stainless steels

Chromium steels, Mechanical properties
The C.L. m—δ Equation of Superplasticity. 679-684A

Chromium steels, Phases (state of matter)
Development of Ferrous Laminated Composites With Unique *Microstructures by Control of Carbon Diffusion.* 1517-1527A

Chromium vanadium steels
See Chromium molybdenum vanadium steels

Circuits
See Integrated circuits

Clad metals, Mechanical properties
Superplasticity of a Stainless Steel *Clad Ultrahigh Carbon* Steel. 2295-2298A

Cleaning
See also Gas scrubbing
Pickling
Surface Oxide on fcc Iron—Nickel Alloys. 163-167A

Cleavage
Microstructural Effects on the Cleavage Fracture Stress of Fully Pearlitic Eutectoid Steel. 1769-1786A

Coating
See Aluminizing
Vapor deposition coating

Coatings
See Oxide coatings
Protective coatings

Cobalt, Alloying additive
Microstructural Characterization of Rapidly Solidified Al—Li—Co Powders. 73-91A
The Effect of Alloying Additions on the Superplastic Properties of Ti—6Al—4V. 93-106A

Cobalt, Alloying elements
Nucleation, Growth, and Overall Transformation Kinetics of Grain Boundary Allotriomorphs of Proeutectoid α in Ti—3.2 at.% Co and Ti—6.6 at.% Cr Alloys. 1703-1715A

Cobalt, Corrosion
The Formation of Volatile Corrosion Products During the Mixed Oxidation—Chlorination of Cobalt at 650°C. 1223-1228A

Cobalt, Diffusion
Interdiffusion in the Ni—Cr—Co—Mo System at 1300°C. 983-990A

Cobalt, Extraction
Leaching Kinetics of Natural Cobalt Triarsenide in Chlorine Solutions. 629-637B

Cobalt, Reactions (chemical)
Rates of Dissolution of Solid Iron, Cobalt, Nickel, and Silicon in Liquid Copper and Diffusion Rate of Iron From Liquid *Cu—Fe Alloy Into Liquid Copper.* 291-305B

Cobalt, Recovering
Diffusivity of Cobalt and Nickel Compounds as a Function of *Concentration and Temperature.* 425-432B

Cobalt, Ternary systems
Balance of Distribution of Some Transition Metals Between the (M', M")B and (M', M")$_2$B Phases. 1665-1669A

Cobalt base alloys, Corrosion
*High Temperature Corrosion of Superalloys in an Environ*ment Containing Both Oxygen and Chlorine. 1087-1094A

Cobalt base alloys, Magnetic properties
*Directional Solidification and Characterization of Near Eu*tectic Sm_2Co_{17}/Co Alloys. 1149-1155A

Cobalt base alloys, Powder technology
*The Critical Grain Size for Liquid Flow Into Pores During Liq*uid Phase Sintering. 1915-1919A

Cobalt compounds, Oxidation
Oxidation of Cobalt Sulfide. 367-373B

Cobalt compounds, Solubility
Alloying Behavior of Co_3Ti. 1433-1439A

Coercive force
Directional Solidification and Annealing of $Mn_{55}Al_{45}$ Alloys. 1247-1249A

Coercive force, Microstructural effects
*Directional Solidification and Characterization of Near Eu*tectic Sm_2Co_{17}/Co Alloys. 1149-1155A
Grain Growth Characteristics and Magnetic Properties of *Rapidly Quenched Silicon Steel Ribbons.* 1295-1299A

Coercivity
See Coercive force

Coils (strip), Crystal growth
Grain Growth in Capped Steel. 1907-1913A

Coke, Reactions (chemical)
Structural Effects in the Reaction Between Carbon Dioxide and Coke Doped With Various Potassium Bearing Catalytic Precursors. 565-574B

Coke breeze
See Coke

Cold cracking (welds)
See Weld defects

Cold ductility
See Ductility

Cold formability
See Formability

Cold forming
See Cold working

Cold reduction
See Cold working

Cold shortness
See Brittleness

Cold working
See also Stretch forming
Deformation of Martensite in a Polycrystalline Cu—Zn—Al Alloy. 945-959A
The Processing and Properties of Heavily Cold Worked Directionally Solidified Ni—W Eutectic Alloys. 1165-1171A

Columbium
See Niobium

Columbium base alloys
See Niobium base alloys

Columbium compounds
See Niobium compounds

Columnar structure, Alloying effects
Microstructural Characterization of Rapidly Solidified Al—Li—Co Powders. 73-91A

Compacting
See also Hot isostatic pressing
An Empirical Model for Hot Isostatic Pressing of Metal Powders. 1977-1984A

Compacts
See Powder compacts
Sintered compacts

Compliance (elasticity)
See Modulus of elasticity

Composite materials
See also Fiber composites

Composite materials, Microstructure
An *In Situ* HVEM Study of Dislocation Generation at Al/SiC Interfaces in Metal Matrix Composites. 379-389A

Compression strength
See Compressive strength

Compressive modulus
See Modulus of elasticity

Compressive strength
High-Temperature Plastic Deformation of Two V—Ga Alloys With A15 Structure. 519-525A

Compressive strength, Microstructural effects
Orientation and Temperature Dependence of Some Mechanical Properties of the Single-Crystal Nickel-Base Superalloy René N4: III. Tension—Compression Anisotropy. 507-512A

Compressive yield strength
See Compressive strength

Computer programs
Announcement of a Computer Program for the Analysis of Compositionally Broadened X-Ray Diffraction Peaks. 899-901A
Orienting Grains With {110} Surface Traces. 961-966A

Computer simulation
Numerical Simulation of Solidification in an Aluminum Casting. 209-216B
Computer Simulation of Convection in Moving Arc Weld Pools. 2271-2277A

Concast
See Continuous casting

Conducting sheet analog
See Heat transmission

Conductivity
See Superconductivity

Conical mills
See Ball mills

Constitutional diagrams
See Phase diagrams

Construction
See Honeycomb construction

Continuous cast shapes, Crystal growth
High Temperature Grain Growth During Slab Reheating of *Oriented 3% Si—Fe Made Using Continuous Casting.* 1335-1346A

Continuous casting
Rotational Electromagnetic Stirring in Continuous Casting of *Round Strands.* 119-131B

Control
See Dust control
Process control

Convection
The Effect of Convection on the Dendrite to Eutectic Transition. 991-1000A
Three-Dimensional Convection in Laser Melted Pools. 2265-2270A
Computer Simulation of Convection in Moving Arc Weld *Pools.* 2271-2277A

Converters
See Basic converters
Bottom blown converters
Copper converters
Rotary converters
Top blown converters

Cooling
See Supercooling

Cooling curves
Microstructure—Mechanical Property Relationships in Isothermally Transformed Vanadium Steels. 1191-1202A
An Assessment of the Additivity Principle in Predicting *Continuous-Cooling Austenite-to-Pearlite Transformation* Kinetics Using Isothermal Transformation Data. 1493-1503A

Cooling rate
The Effect of Solidification Rate on Microsegregation. 2063-2073A

Copes (molds)
See Sand molds

Copper, Alloying additive
Superplastic Behavior of a Zn—22Al—0.5Cu Alloy. 1873-1875A

Copper, Alloying elements
Effect of Copper Precipitation on the Development of Recrystallization Textures Through Continuous Annealing of *Low-Carbon Sheet Steel.* 621-633A
Microstructure of a Quenched and Tempered Copper-Bearing High-Strength Low-Alloy Steel. 791-798A
Formation of Copper Pockets in Iron Grains During the Sintering of Fe—Cu Alloys. 1429-1431A
The Effect of Hot-Rolling on Chill Cast Al—Al_3Ni, Chill-Cast Al—Al_2Cu, and Unidirectionally Solidified Al—Al_3Ni Eutectic Alloys. 1985-1993A
The Effect of Solidification Rate on Microsegregation. 2063-2073A
Effects of Copper on Proeutectoid Cementite Precipitation. 2163-2173A

Copper, Binary systems
An Ambiguity in the Definition of the Activity Coefficient at Infinite Dilution. 1484-1485A

Copper, Crystal lattices
Reexamination of Grain-Boundary Sliding by Diffusion. 1949-1953A

Copper, Diffusion
Diffusional Breakdown of a Silver Diffusion Barrier in a Cu—Ag—Ni Diffusion Triple. 933-944A

Copper, Extraction
Measurements of Oxygen Pressure in a Copper Flash Smelting Furnace by an EMF Method. 111-117B
Dissolution of Solid Magnetite in Fe—S—O Melt. 639-645B
Heat Flow in Copper Converters. 677-685B
Arsenic Activities in Molten Copper and Copper Sulfide Melts. 755-761B
Thermodynamics of Gaseous SbS. 913-914B
Discussion of "Lime-Enhanced Reduction of Sulfide Concentrates: a Thermodynamic Discussion" and Authors' Reply. 914-918B

Copper, Mechanical properties
Orientation and Strain Dependence of Stored Energy of Cold *Work in Axisymmetric Copper.* 513-517A

Copper, Physical properties
Interfacial Tension and Flotation Characteristics of Liquid *Metal—Sodium Flux Systems.* 339-346B

Copper, Reactions (chemical)
Rates of Dissolution of Solid Iron, Cobalt, Nickel, and Silicon *in Liquid Copper and Diffusion Rate of Iron From Liquid* Cu—Fe Alloy Into Liquid Copper. 291-305B

Copper, Refining
A Kinetic Model for the Vacuum Refining of Inductively Stirred Copper Melts. 87-103B
A Pressurized Screw Feeder for Powder Injection. 229-231B

Copper, Solubility
A Solid-State EMF Study of the Cu—Cu_2O—NiO Three-Phase Equilibrium. 1104-1106A

Copper, Ternary systems
Estimation of Diffusion Path Slopes at Zero-Flux Plane Compositions. 362-364A

Copper base alloys
See also Beryllium bronzes
Brasses

Copper base alloys, Corrosion
On the Failure Mechanism of Chemically Embrittled Cu_3Au *Single Crystals.* 703-710A

Copper base alloys, Phase transformations
Transformation Sequence in a Cu—Al—Ni Shape Memory *Alloy at Elevated Temperatures.* 65-72A

Copper base alloys, Phases (state of matter)
Nature of Large Ti_4Cu_2O Particles Formed During Annealing of $Cu_{55}Ti_{45}$ Metallic Glass Ribbons. 575-581A

Copper base alloys, Reactions (chemical)
Activity Coefficient of Oxygen in Copper—Tellurium Melts. 171-177B

Copper base alloys, Structural hardening
Discussion of "The Early Stages of the Decomposition of Alloys" and Author's Reply. 742A
Particle Size and Orientation Effects on Softening in a Copper Matrix Containing Rod-Shaped Iron Particles. 1751-1755A

Copper compounds, Solubility
A Solid-State EMF Study of the Cu—Cu_2O—NiO Three-*Phase Equilibrium.* 1104-1106A

Copper converters
Heat Flow in Copper Converters. 677-685B

Copper mattes
Measurements of Oxygen Pressure in a Copper Flash Smelting Furnace by an EMF Method. 111-117B
Dissolution of Solid Magnetite in Fe—S—O Melt. 639-645B
Arsenic Activities in Molten Copper and Copper Sulfide Melts. 755-761B
Thermodynamics of Gaseous SbS. 913-914B

Copper mattes, Solubility
Solubility of Oxygen and Sulfur in Copper—Iron Mattes. 147-157B
Correction to "Solubility of Oxygen and Sulfur in Copper—Iron Mattes". 400B

Copper ores
See Chalcocite
Chalcopyrite

Core hardness
See Hardness

Core loss, Composition effects
The Effect of Manganese and Sulfur Contents on the Magnetic Properties of Cold Rolled Lamination Steels. 1259-1266A

Core loss, Microstructural effects
The Effect of Thermomechanical History Upon the Microstructure and Magnetic Properties of Nonoriented Silicon Steels. 1267-1275A
The Kinetics of Carbide Precipitation in Silicon—Aluminum Steels. 1287-1294A
Grain Growth Characteristics and Magnetic Properties of Rapidly Quenched Silicon Steel Ribbons. 1295-1299A

Corrosion
See Bacterial corrosion
Carburization (corrosion)
Corrosion fatigue
Hot gas corrosion
Preferential attack (corrosion)

Corrosion cracking
See Stress corrosion cracking

Corrosion fatigue
Fatigue Crack Growth Rates in a Pressure Vessel Steel Under Various Conditions of Loading and the Environment. 1837-1849A
Liquid Cesium Tellurium-Induced Fatigue Embrittlement of Cold-Worked 316 Stainless Steel. 2090-2093A

Corrosion fatigue, Field effects
The Effect of Cathodic Polarization on the Corrosion Fatigue Behavior of a Precipitation Hardened Aluminum Alloy. 339-347A

Corrosion mechanisms
See Bacterial corrosion

Corrosion products
The Formation of Volatile Corrosion Products During the Mixed Oxidation—Chlorination of Cobalt at 650°C. 1223-1228A

Corrosion rate, High temperature effects
High Temperature Corrosion of Superalloys in an Environment Containing Both Oxygen and Chlorine. 1087-1094A

Corrosion resistance
Mechanical Properties and Microstructure of Al—Li—Cu—Mg—Zr Die Forgings. 2007-2016A

Cost savings
See Economics

CO2 arc welding
See Gas metal arc welding

Crack closure
Further Observations of SCC in α—β Brass: Considerations Regarding the Appearance of Crack Arrest Markings During SCC. 1081-1086A

Crack growth
See Crack propagation

Crack initiation
Microcrack Initiation and Acoustic Emission During Fracture Toughness Tests of A533B Steel. 843-852A

Crack propagation
Fatigue Crack Growth and Fracture Toughness Behavior of an Al—Li—Cu Alloy. 1011-1026A
Hydrogen-Induced Subcritical Crack Growth of a 12Cr—1Mo Ferritic Stainless Steel. 1229-1240A
Fatigue Crack Propagation in Nickel-Base Superalloy Single Crystals Under Multiaxial Cyclic Loads. 1739-1750A
The Influence of Load Ratio on Fatigue Crack Growth in 7090-T6 and IN9021-T4 P/M Aluminum Alloys. 1787-1795A
Micromechanistic Expressions of Continuum Microscale Parameters for Stable Crack Growth. 2249-2253A

Crack propagation, Environmental effects
Effect of Environment on Fatigue Crack Propagation Behavior of Alloy 718 at Elevated Temperatures. 370-374A

Crack resistance
See Crack propagation

Cracking (fracturing)
See Crack initiation
Stress corrosion cracking

Cratering (welding)
See Weld defects

Creep (materials)
See also Creep rate
Creep rupture strength
Creep strength
Metallic Surface Layers Deposited by Diffusional Creep During Internal Oxidation. 746-749A
An Examination of Class A to Class M Transition in Pb—9Sn and Other Alloys. 1447-1453A
Cyclic Creep and Anelastic Relaxation Analysis of an ODS Superalloy. 1577-1583A
Reexamination of Grain-Boundary Sliding by Diffusion. 1949-1953A
Changes in the Subboundary Mesh Size With Creep Strain in 304 Stainless Steel. 2093-2097A

Creep limit
See Creep (materials)

Creep properties
See Creep (materials)

Creep rate
Constrained Cavity Growth Models of Longitudinal Creep Deformation of Oxide Dispersion Strengthened Alloys. 281-293A

Creep rate, Corrosion effects
Examination of the Titanium Environment in a René 41 Nickel Base Superalloy by X-Ray Absorption Spectroscopy. 739-741A

Creep resistance
See Creep strength

Creep rupture strength, Alloying effects
The Effects of Replacing the Refractory Elements Tungsten, Niobium, and Tantalum With Molybdenum in Nickel-Base Superalloys on Microstructural, Microchemistry, and Mechanical Properties. 651-661A
The Microstructure and Mechanical Properties of a Modified 2.25Cr—1Mo Steel. 1027-1034A

Creep strength
Constrained Cavity Growth Models of Longitudinal Creep Deformation of Oxide Dispersion Strengthened Alloys. 281-293A

Creep strength, Alloying effects
Microstructure and Creep Behavior of a Niobium Alloyed Cast Heat-Resistant 26% Chromium Steel. 691-696A

Creep strength, Stress effects
Correlation Between Creep Stess Exponent and Ductility in Al—10 At.% Zn. 365-366A

Creeping
See Creep (materials)

Critical temperature
See also Eutectic temperature

Critical temperature, Size effects
The Alpha ⇄ Gamma Transformation in Iron Powders. 37-44A

Cross slip
Deformation of a Burgers Oriented Bimetallic Bicrystal of α—β (Ti—13Mn). 451-460A

Cross tension test
See Tension tests

Crushing strength
See Compressive strength

Cryogenic properties, Alloying effects
Effect of Aluminum Content on Low Temperature Tensile Properties in Cryogenic Fe/Mn/Al/Nb/C Steels. 2097-2098A

Crystal defects
See also Dislocations
Interstitial defects
Lattice vacancies
Fault Structures in Rapidly Quenched Ni—Mo Binary Alloys. 2291-2294A

Crystal orientation
See Crystal structure

Crystal structure
See also Equiaxed structure
Description of the Intercrystalline Structure Distribution in Polycrystalline Materials. 2199-2207A

Crystal structure, Alloying effects
$L1_2$-Type Ni—Al—Cr Alloys Processed by Rapid Solidification. 1685-1692A

Crystal structure, Deformation effects
Modification of α Morphology in Ti—6Al—4V by Thermomechanical Processing. 1935-1947A

Crystallinity
See Crystal structure

Crystallization
See also Recrystallization
Secondary recrystallization
A Straightforward New Procedure for Determining Crystallization Kinetics by Heating Rate DSC. 561-566A
Nonlinear Regression Analysis of Superimposed DSC Crystallization Peaks. 1479-1481A

Crystals
See Single crystals

Current density
Electrocapillarity in the Aluminum Reduction Cell. 547-552B
Heat Transfer and Fluid Flow in the Welding Arc. 1139-1148A

Currents
See Electric arcs

Curves
See Cooling curves
Stress strain curves

Cyanides, Sorption
Potentiometric Studies on the Adsorption of $Au(CN)_2^-$ and $Ag(CN)_2^-$ Onto Activated Carbon. 523-528B
Studies on Role of Oxygen in the Adsorption of $Au(CN)_2^-$ and $Ag(CN)_2^-$ Onto Activated Carbon. 529-533B

Decarburizing
The Kinetics of the Nitrogen Reaction With Liquid Iron—Chromium Alloys. 317-322B
Effects of Decarburization and Normalizing Heat Treatment in Boron-Silicon Iron Alloys. 1353-1359A

Dechromizing
Void Formation in INCONEL MA-754 by High Temperature Oxidation. 151-162A

Decomposition
See Eutectoid decomposition
Phase decomposition

Deep carburizing
See Carburizing

Deep drawability
See Drawability

Defects
See Blowholes
Casting defects
Crystal defects
Dislocations
Interstitial defects
Lattice vacancies
Weld defects

Deformability
See Formability

Deformation
See Plastic deformation
Prestraining

Demetallization
See Dechromizing

Dendrite
See Dendritic structure

Dendritic powder, Microstructure
Dendritic Microstructure in Argon Atomized Superalloy Powders. 2099-2102A

Dendritic structure
Microstructure and Stability of Melt Spun Inconel 713LC. 173-180A
The Effect of Quenching on Mushy-Zone Microstructures. 360-362A
Dendrite Characteristics in Directionally Solidified Pb—8Au and Pb—3Pd Alloys. 2279-2290A

Dendritic structure, Alloying effects
Microstructural Characterization of Rapidly Solidified Al—Li—Co Powders. 73-91A

Dendritic structure, Composition effects
Dendritic Microstructure in Argon Atomized Superalloy Powders. 2099-2102A

Dendritic structure, Crystal growth
The Effect of Convection on the Dendrite to Eutectic Transition. 991-1000A
Microstructural Variations Induced by Gravity Level During Directional Solidification of Near-Eutectic Iron—Carbon Type Alloys. 1121-1130A

Dendritic structure, Impurity effects
The Influence of Iron and Chromium on the Microstructure of Cast Al—Si—Mg Alloys. 45-52A

Dendritic structure, Pressure effects
The Effect of Gravity Level on the Average Primary Dendritic Spacing of a Directionally Solidified Superalloy. 2301-2303A

Densification
An Empirical Model for Hot Isostatic Pressing of Metal Powders. 1977-1984A

Deoxidation
See Deoxidizing

Deoxidizers
Solubility and Activity of Oxygen in Liquid Nickel in Equilibrium With α-Al_2O_3 and NiO x (1 + x)Al_2O_3. 763-770B

Deoxidizing
Solubility and Activity of Oxygen in Liquid Nickel in Equilibrium With α-Al_2O_3 and NiO x (1 + x)Al_2O_3. 763-770B
A Model for the Silicon—Manganese Deoxidation of Steel Weld Metals. 1797-1807A

Dephosphorizing
A Pressurized Screw Feeder for Powder Injection. 229-231B
Soda Slag System for Hot Metal Dephosphorization. 797-804B

Depletion
Lithium Depletion During Heat Treatment of Aluminum—Lithium Alloys. 635-643A

Deposition
See Aluminizing
Vapor deposition coating

Depth profiling, Automation
Announcement of a Computer Program for the Analysis of Compositionally Broadened X-Ray Diffraction Peaks. 899-901A

Desulfurizing
A Pressurized Screw Feeder for Powder Injection. 229-231B
The Sulfur Partition Ratio and the Sulfide Capacity of Na_2O—SiO_2 Slags at 1200°C. 491-496B
The Study of Desulfurization Kinetics in Grain Oriented 3% Silicon Iron. 1347-1351A

Deuterium, Diffusion
Hydrogen and Deuterium Diffusion in Vanadium—Niobium Alloys. 645-650A

Diagrams
See Phase diagrams

Die forgings, Mechanical properties
Mechanical Properties and Microstructure of Al—Li—Cu—Mg—Zr Die Forgings. 2007-2016A

Differential thermal analysis
A Straightforward New Procedure for Determining Crystallization Kinetics by Heating Rate DSC. 561-566A
Nonlinear Regression Analysis of Superimposed DSC Crystallization Peaks. 1479-1481A

Diffraction
See Electron diffraction

Diffusion
Diffusional Breakdown of a Silver Diffusion Barrier in a Cu—Ag—Ni Diffusion Triple. 933-944A
Discussion of "The Bainite Reaction in Fe- -Si—C Alloys: the Primary Stage" and "The Bainite Reaction in Fe—Si—C Alloys: the Secondary Stage". 1095-1100A
Determination of the Interdiffusion Coefficients in the Fe—Ni and Fe—Ni—P Systems Below 900°C. 1131-1138A

Diffusion, Composition effects
Estimation of Diffusion Path Slopes at Zero-Flux Plane Compositions. 362-364A

Diffusion, High temperature effects
Interdiffusion in the Ni—Cr—Co—Mo System at 1300°C. 983-990A

Diffusion bonding
See Diffusion welding

Diffusion coefficient
See Diffusion

Diffusion couples
See Diffusion

Diffusion rate
Determination of Diffusion Coefficient of Oxygen in γ-Iron From Measurements of Internal Oxidation in Fe—Al Alloys. 221-229A

Diffusion welding
The Diffusion Bonding of Zr—2.5Nb to Steel. 429-434A

Diffusivity
The Trapping and Transport Phenomena of Hydrogen in Nickel. 181-187A
Measurement of Tracer Diffusivities of Ca^{45} and Fe^{59} in Silica Saturated FeO—CaO—SiO_2 Melts With the Porous Frit Technique. 497-501B
Anomalously Fast Diffusion in the Fe—Zn System. 1523-1527A
A Simplified Treatment of Carbon Diffusion in Compound Welds Having an Intermediate Layer. 2083-2084A
On the Effective Hydrogen Permeability in Metastable β Titanium Alloy, Niobium and 2.25Cr—1Mo Ferritic Steel. 2086-2090A

Diffusivity, Deformation effects
Hydrogen Transport During Deformation in Nickel. I. Polycrystalline Nickel. 861-867A
Hydrogen Transport During Deformation in Nickel. II. Single Crystal Nickel. 869-875A

Dilatometry
Analysis of Transformation Kinetics by Nonisothermal Dilatometry. 1441-1445A

Dimensions
See Particle size

Dioxides
See Carbon dioxide
Silicon dioxide

Direct reduction
Mechanism of Growth of Metallic Phase in Direct Reduction of Iron Bearing Oolites. 433-442B
Development of an Analytical Equation for Calculation of the Blast Furnace Fuel Rate. 705-724B

Direct reduction, Impurity effects
The Gaseous Reduction of Solid Calciowustites in CO/CO_2 and H/H_2O Gas Mixtures. 375-381B
The Effect of Sulfur on the Gaseous Reduction of Solid Calciowustites. 383-393B

Directional solidification
Effect of Fluid Flow and Hafnium Content on Macrosegregation in the Directional Solidification of Nickel Base Superalloys. 347-356B
The Effect of Convection on the Dendrite to Eutectic Transition. 991-1000A
Microstructural Variations Induced by Gravity Level During Directional Solidification of Near-Eutectic Iron—Carbon Type Alloys. 1121-1130A
Directional Solidification and Characterization of Near Eutectic Sm_2Co_{17}/Co Alloys. 1149-1155A
The Processing and Properties of Heavily Cold Worked Directionally Solidified Ni—W Eutectic Alloys. 1165-1171A
Directional Solidification and Annealing of $Mn_{55}Al_{45}$ Alloys. 1247-1249A

Directionally solidified eutectics, Crystal growth
Dendrite Characteristics in Directionally Solidified Pb—8Au and Pb—3Pd Alloys. 2279-2290A

Directionally solidified eutectics, Mechanical properties
Tensile Properties of Directionally Solidified Al—4Cu Alloys With Columnar and Equiaxed Grains. 823-832A
The Effect of Hot-Rolling on Chill-Cast Al—Al_3Ni, Chill-Cast Al—Al_2Cu, and Unidirectionally Solidified Al—Al_3Ni Eutectic Alloys. 1985-1993A

Dislocations
An *In Situ* HVEM Study of Dislocation Generation at Al/SiC Interfaces in Metal Matrix Composites. 379-389A

Dislocations, Heating effects
On the Kinetics of the Spreading of Extrinsic Grain Boundary Dislocations. 1967-1975A

Dispersion hardening alloys, Mechanical properties
Constrained Cavity Growth Models of Longitudinal Creep Deformation of Oxide Dispersion Strengthened Alloys. 281-293A

Dispersion hardening alloys, Oxidation
Void Formation in INCONEL MA-754 by High Temperature Oxidation. 151-162A

Displacements (lattice)
See Interstitial defects

Dissimilar metals, Welding
The Diffusion Bonding of Zr—2.5Nb to Steel. 429-434A
A Simplified Treatment of Carbon Diffusion in Compound Welds Having an Intermediate Layer. 2083-2084A

Dissociation energy
See Free energy of formation

Dissolution
Dissolution Behavior of 304 Stainless Steel in HNO_3/HF Mixtures. 137-149A
Rate of Dissolution of Solid Nickel in Liquid Tin Under Static Conditions. 281-289B
Rates of Dissolution of Solid Iron, Cobalt, Nickel, and Silicon in Liquid Copper and Diffusion Rate of Iron From Liquid Cu—Fe Alloy Into Liquid Copper. 291-305B
Dissolution of Solid Magnetite in Fe—S—O Melt. 639-645B

Dissolving
See Dissolution

Drags (molds)
See Sand molds

Drawability
On the Directionality of Strain Localization When Stretching Aluminum Alloy Sheets in Biaxial Tension. 367-370A

Drawing (heat treatment)
See Tempering

Drill steels
See Tool steels

Dual phase steels, Alloy development
Effect of Copper Precipitation on the Development of Recrystallization Textures Through Continuous Annealing of Low-Carbon Sheet Steel. 621-633A

Dual phase steels, Mechanical properties
The Ductility of a HSLA Steel at Temperatures Below 300K. 697-702A

Ductile brittle transition
A Study of the Effect of Precipitated Austenite on the Fracture of a Ferritic Cryogenic Steel. 243-252A
The Influence of Precipitated Austenite on Hydrogen Embrittlement in 5.5Ni Steel. 1157-1164A
The Effects of Interstitials and Hydrogen-Interstitial Interactions on Low Temperature Hardening and Embrittlement in Vanadium, Niobium, and Tantalum. 1179-1189A
Effect of Microstructure on Strength and Toughness of Heat-Treated Low Alloy Structural Steels. 1203-1209A

Ductile iron
See Nodular iron

Ductility
The Ductility of a HSLA Steel at Temperatures Below 300K. 697-702A

Ductility, Diffusion effects
Effects of Nitrogen on the Mechanical Behavior of Hydrogenated Vanadium, Niobium, and Tantalum. 527-535A
Absence of Hydrogen Influence on the Mechanical Stability of Retained Austenite in a 0.2C/12Cr/1Mo Steel. 1876-1877A

Ductility, Heating effects
Influence of Soaking Treatments on Hot Ductility of Al—4.85Mg Alloys Containing Manganese. 833-841A

Ductility, Impurity effects
Effects of Oxygen on the Mechanical Behavior of Hydrogenated Vanadium, Niobium, and Tantalum. 853-859A

Ductility, Microstructural effects
Effects of the Prior Austenite Grain Size on the Ductility of Fully Pearlitic Eutectoid Steel. 461-472A
Microstructural Dependence of Iron—High Manganese Tensile Behavior. 537-547A
High Temperature Ductility Loss in Carbon—Manganese and Niobium-Treated Steels. 1995-2006A

Ductility, Stress effects
Correlation Between Creep Stess Exponent and Ductility in Al—10 At.% Zn. 365-366A

Duomelt process
See Vacuum arc melting

Duplex stainless steels, Mechanical properties
Flow Localization During Plane Strain Punch-Stretching of a Ferrite—Austenite Steel. 1537-1546A

Dust collection
See Dust control

Dust control
Theoretical and Experimental Study of the Removal of Dust Particles From Flue Gases Using Two-Phase Steam—Water Droplet Mixtures. 665-676B

Dynamics
See Fluid dynamics
Hydrodynamics
Kinetics

Economics
Materials and Electricity. 755-775A

Elastic constants
See Modulus of elasticity

Elastic modulus
See Modulus of elasticity

Elasticity
See Pseudoelasticity

Electric arc furnaces
See Vacuum arc furnaces

Electric arc melting
See Vacuum arc melting

Electric arc welding
See Arc welding

Electric arcs
Pressures Produced by Gas Tungsten Arcs. 601-607B

Electric circuits
See Integrated circuits

Electric conductors (materials)
See Electrolytes

Electric current
See Electric arcs

Electric discharges
See Electric arcs

Electric furnaces
See also Electric induction furnaces
Vacuum arc furnaces
Thermodynamics of the Si—C—O System for the Production of Silicon Carbide and Metallic Silicon. 503-514B

Electric induction furnaces
Turbulent Recirculating Flow in Induction Furnaces: a Comparison of Measurements With Predictions Over a Range of Operating Conditions. 687-693B

Electric power generation
Materials and Electricity. 755-775A

Electric power plants
See Electric power generation

Electric power stations
See Electric power generation

Electric welding
See Arc welding
Gas metal arc welding
Gas tungsten arc welding
Plasma arc welding
Resistance spot welding
Spot welding
Submerged arc welding

Electrical phenomena
See Electric arcs
Electrode potentials

Electrical properties
See Carrier density
Superconductivity

Electrical steels, Crystal growth
Grain Growth Characteristics and Magnetic Properties of Rapidly Quenched Silicon Steel Ribbons. 1295-1299A
High Temperature Grain Growth During Slab Reheating of Oriented 3% Si—Fe Made Using Continuous Casting. 1335-1346A
Effects of Decarburization and Normalizing Heat Treatment in Boron-Silicon Iron Alloys. 1353-1359A

Electrical steels, Heat treatment
The Study of Desulfurization Kinetics in Grain Oriented 3% Silicon Iron. 1347-1351A

Electrical steels, Magnetic properties
The Effect of Manganese and Sulfur Contents on the Magnetic Properties of Cold Rolled Lamination Steels. 1259-1266A
The Effect of Thermomechanical History Upon the Microstructure and Magnetic Properties of Nonoriented Silicon Steels. 1267-1275A

Electrical steels, Microstructure
Factors Affecting the Final Grain Size of Decarburized Lamination Steels. 1277-1285A
New Information on Texture Development in Regular and High-Permeability Grain-Oriented Silicon Steels. 1301-1312A
Origin and Development of Through-the-Thickness Variations of Texture in the Processing of Grain-Oriented Silicon Steel. 1313-1322A
Formation of the Goss Orientation Near the Surface of 3% Silicon Steel During Hot Rolling. 1323-1334A

Electrical steels, Structural hardening
The Kinetics of Carbide Precipitation in Silicon—Aluminum Steels. 1287-1294A

Electrode potentials
A Solid-State EMF Study of the Cu—Cu_2O—NiO Three-Phase Equilibrium. 1104-1106A

Electrogas welding
See Gas metal arc welding

Electrohydrodynamics
See Magnetohydrodynamics

Electrolysis
See also Electrowinning
Reduction (electrolytic)
The Vapor—Liquid Equilibria of the Aluminum Chloride—Titanium Tetrachloride System. 609-610B

Electrolytes, Phases (state of matter)
Phase Diagram Studies of the Systems KCl—K_3MoCl_6 and LiCl—K_3MoCl_6. 231-232B

Electrolytic cells
Electrocapillarity in the Aluminum Reduction Cell. 547-552B

Electrolytic pickling
See Pickling

Electrolytic reduction
See Reduction (electrolytic)

Electromagnetic stirring
Rotational Electromagnetic Stirring in Continuous Casting of Round Strands. 119-131B
Turbulent Recirculating Flow in Induction Furnaces: a Comparison of Measurements With Predictions Over a Range of Operating Conditions. 687-693B

Electromotive force series
See Electrode potentials

Electromotive series
See Electrode potentials

Electron diffraction
Modulated Microstructures in β Cu—Zn—Al. 2153-2161A

Electron microscopy
See Transmission electron microscopy

Electroplating
See Fused salt plating

Electroreduction
See Electrowinning

Electrorefining
A Study on Purification of Metallurgical Grade Silicon by Molten Salt Electrorefining. 395-397B

Electrowinning
Laboratory Reduction Rate and Current Efficiency Studies of Batch Type Electrolytic Reduction of Uranium(VI) in a Sulfate System. 69-76B

Elongation, Alloying effects
Effect of Aluminum Content on Low Temperature Tensile Properties in Cryogenic Fe/Mn/Al/Nb/C Steels. 2097-2098A

Embrittlement
See also Hydrogen embrittlement
Liquid metal embrittlement

Embrittlement, Composition effects
A Comparative Study of the Heat Affected Zone (HAZ) Properties of Boron Containing Low Carbon Steels. 1529-1536A

Embrittlement, Microstructural effects
High Temperature Ductility Loss in Carbon—Manganese and Niobium-Treated Steels. 1995-2006A

Endurance limit
See Fatigue limit

Energy
See Free energy
Free energy of formation
Heat of formation
Heat of mixing
Heat of solution
Internal energy

Energy of dissociation
See Free energy of formation

Energy of formation
See Free energy of formation

Enthalpy
Legendre Polynomial Expansions of Thermodynamic Properties of Binary Solutions. 1057-1063A
Standard Enthalpies of Formation of $TiSi_2$ and VSi_2 by High-Temperature Calorimetry. 1217-1221A

Entropy
Legendre Polynomial Expansions of Thermodynamic Properties of Binary Solutions. 1057-1063A

Equiaxed structure, Alloying effects
Microstructural Characterization of Rapidly Solidified Al—Li—Co Powders. 73-91A

Equilibrium diagrams
See Phase diagrams

Eutectic reactions
The Effect of Convection on the Dendrite to Eutectic Transition. 991-1000A
Microstructural Variations Induced by Gravity Level During Directional Solidification of Near-Eutectic Iron—Carbon Type Alloys. 1121-1130A

Eutectic temperature, Alloying effects
Effect of Small Additions of Silver on the Eutectic Temperature in the Lead—Tin System. 829-832B

Eutectics
See also Directionally solidified eutectics

Eutectics, Deformation effects
The Effect of Hot-Rolling on Chill-Cast Al—Al_3Ni, Chill-Cast Al—Al_2Cu, and Unidirectionally Solidified Al—Al_3Ni Eutectic Alloys. 1985-1993A

Eutectoid decomposition, Alloying effects
Effects of Copper on Proeutectoid Cementite Precipitation. 2163-2173A

Eutectoid reactions
See also Eutectoid decomposition
Nucleation Kinetics of Proeutectoid Ferrite at Austenite Grain Boundaries in Fe—C—X Alloys. 1385-1397A
The Kinetics of Ferrite Nucleation at Austenite Grain Edges in Fe—C and Fe—C—X Alloys. 1399-1407A

Explosive bonding
Discussion of "Fundamental Aspects of Formation and Stability of Explosive Welds" and Reply. 374A

Extraction
See Solvent extraction

Extractive metallurgy
See Hydrometallurgy

Extrusion compacting
See Compacting

Extrusions, Mechanical properties
The Influence of Load Ratio on Fatigue Crack Growth in 7090-T6 and IN9021-T4 P/M Aluminum Alloys. 1787-1795A

Failure analysis
See Fractography

Fatigue (materials)
See also Corrosion fatigue
Fatigue life
Fatigue limit
Fatigue strength
Low cycle fatigue
Serrated Grain Boundary Formation During High Temperature Fatigue. 1100-1102A
Rolling Contact Deformation of 1100 Aluminum Disks. 1561-1572A
Fatigue Crack Propagation in Nickel-Base Superalloy Single Crystals Under Multiaxial Cyclic Loads. 1739-1750A
The Influence of Load Ratio on Fatigue Crack Growth in 7090-T6 and IN9021-T4 P/M Aluminum Alloys. 1787-1795A
Grain Boundary Contribution to the Bauschinger Effect in β-Brass Bicrystals. 2017-2029A

Fatigue (materials), Environmental effects
Effect of Environment on Fatigue Crack Propagation Behavior of Alloy 718 at Elevated Temperatures. 370-374A

Fatigue cracking
See Fatigue (materials)

Fatigue life, Impurity effects
Influence of Foreign Particles on Fatigue Behavior of Ti—6Al—4V Prealloyed Powder Compacts. 271-280A

Fatigue limit
Fatigue Crack Growth and Fracture Toughness Behavior of an Al—Li—Cu Alloy. 1011-1026A

Fatigue properties
See Fatigue (materials)

Fatigue strength, Deformation effects
Effect of Isothermal Forging on Microstructure and Fatigue Behavior of Blended Elemental Ti—6Al—4V Powder Compacts. 549-559A

Feeders, Design
A Pressurized Screw Feeder for Powder Injection. 229-231B

Ferric compounds
See Iron compounds

Ferrite, Crystal growth
Discussion of "The Bainite Reaction in Fe—Si—C Alloys: the Primary Stage" and "The Bainite Reaction in Fe—Si—C Alloys: the Secondary Stage". 1095-1100A
On the Critical Nucleus Composition of Ferrite in an Fe—C—Mn Alloy. 1381-1384A
Nucleation Kinetics of Proeutectoid Ferrite at Austenite Grain Boundaries in Fe—C—X Alloys. 1385-1397A
The Kinetics of Ferrite Nucleation at Austenite Grain Edges in Fe—C and Fe—C—X Alloys. 1399-1407A
Application of Microstructure Modeling to the Kinetics of Proeutectoid Ferrite Transformation in Hot-Rolled Microalloyed Steels. 1625-1629A

Ferrites, Synthesis
Electrochemical Determination of Thermodynamic Properties and X-Ray Diffraction Investigation of the Fe_3O_4—$ZnFe_2O_4$ System. 515-521B

Ferritic stainless steels, Mechanical properties
Microstructures and Mechanical Properties of Melt-Quenched Ferritic Stainless Steels. 261-269A
Microstructure and Creep Behavior of a Niobium Alloyed Cast Heat-Resistant 26% Chromium Steel. 691-696A
Hydrogen-Induced Subcritical Crack Growth of a 12Cr—1Mo Ferritic Stainless Steel. 1229-1240A
Absence of Hydrogen Influence on the Mechanical Stability of Retained Austenite in a 0.2C/12Cr/1Mo Steel. 1876-1877A

Ferromagnetic materials
See Magnetite

Ferrous alloys
See also Alloy steels
Cast iron
Steels

Ferrous alloys, Diffusion
Determination of the Interdiffusion Coefficients in the Fe—Ni and Fe—Ni—P Systems Below 900°C. 1131-1138A

Ferrous alloys, Microstructure
On the Microstructure and Mechanical Behavior of Melt-Spun Fe—24Ni—0.5C Ribbons: Effect of Austenite Grain Size. 127-136A

Ferrous alloys, Oxidation
Surface Oxide on fcc Iron—Nickel Alloys. 163-167A
Determination of Diffusion Coefficient of Oxygen in γ-Iron From Measurements of Internal Oxidation in Fe—Al Alloys. 221-229A
Reactions of Fe—Cr and Ni—Cr Alloys in CO/CO_2 Gases at 850 and 950°C. 1065-1074A

Ferrous alloys, Phase transformations
Roles of Dislocations and Grain Boundaries in Martensite Nucleation. 1693-1702A

Ferrous alloys, Phases (state of matter)
Discussion of "Miscibility Gap in Fe—Ni—Al and Fe—Ni—Al—Co Systems" and "Role of Alloying Elements in Phase Decomposition in Alnico Magnet Alloys". 1629-1632A
Analytical Scanning Transmission Electron Microscopic Study of Metastable Modulated Structure in a Rapidly Quenched Fe—22Ni—8Al—2.4C Alloy. 2077-2080A

Ferrous alloys, Physical properties
A Calculation of Viscosities for Iron—Metalloid Liquids. 901-903A

Ferrous alloys, Powder technology
Processing of Iron—Titanium Powder Mixtures by Transient Liquid Phase Sintering. 205-213A
Formation of Copper Pockets in Iron Grains During the Sintering of Fe—Cu Alloys. 1429-1431A
The Critical Grain Size for Liquid Flow Into Pores During Liquid Phase Sintering. 1915-1919A
Effect of Entrapped Inert Gas on Pore Filling During Liquid Phase Sintering. 2175-2182A

Ferrous alloys, Solubility
Nitrogen Solubility in Liquid Iron and Fe—Mn Alloys. 238-239B
Comparison of Solution Models for Nonmetallic Solutes in Binary Liquid Alloys: Nitrogen in Fe—Cr and Fe—Ni. 785-789B

Ferrous alloys, Thermal properties
A Modified Interaction Parameter Formalism for Non-Dilute Solutions. 1211-1215A

Ferrous compounds
See Iron compounds

Ferrous metals
See Ferrous alloys

Fiber composites, Magnetic properties
Directional Solidification and Annealing of $Mn_{55}Al_{45}$ Alloys. 1247-1249A

Fiber composites, Oxidation
The Effect of Thermal Exposure on the Microstructure and Fiber/Matrix Interface of an Al_2O_3/Al Composite. 1075-1080A

Fiber composites, Thermal properties
Thermal Transient Stresses Due to Rapid Cooling in a Thermally and Elastically Orthotropic Medium. 1051-1055A

Fiber metallurgy
See Fiber composites

Fields (physics)
See Magnetic fields

Finite element method
Effect of Stress—Strain-Law Transients on Formability. 1001-1009A
Invariance of Neck Formation to Material Strength and Strain Rate for Power-Law Materials. 1632-1633A

Finsider process
See Direct reduction

Flame reduction process
See Direct reduction

Flash smelting
Measurements of Oxygen Pressure in a Copper Flash Smelting Furnace by an EMF Method. 111-117B
Dissolution of Solid Magnetite in Fe—S—O Melt. 639-645B

Flexural vibration
See Fatigue (materials)

Flow
See Fluid flow
Plastic flow
Turbulent flow

Flow stress
See Yield strength

Fluid bed roasting
See Fluidized bed roasting

Fluid dynamics
See also Hydrodynamics
A Mathematical Model of the Planar Flow Melt Spinning Process. 695-703B

Fluid flow
See also Turbulent flow
Heat Transfer and Fluid Flow in the Welding Arc. 1139-1148A

Fluid mechanics
See Fluid dynamics
Hydrodynamics

Fluidity
See Viscosity

Fluidized bed roasting
Agglomeration of Particles During Roasting of Zinc Sulfide Concentrates. 647-656B

Fluosolids roasting
See Fluidized bed roasting

Fluxes
Interfacial Tension and Flotation Characteristics of Liquid Metal—Sodium Flux Systems. 339-346B

Force
See Coercive force

Forging
Effect of Isothermal Forging on Microstructure and Fatigue Behavior of Blended Elemental Ti—6Al—4V Powder Compacts. 549-559A

Forgings
See also Die forgings

Forgings, Mechanical properties
The Influence of Load Ratio on Fatigue Crack Growth in 7090-T6 and IN9021-T4 P/M Aluminum Alloys. 1787-1795A

Formability
Effect of Stress—Strain-Law Transients on Formability. 1001-1009A
Flow Localization During Plane Strain Punch Stretching of a Ferrite—Austenite Steel. 1537-1546A

Forming
See Forging
Hot isostatic pressing
Hot rolling
Stretch forming
Thermomechanical treatment

Fractography
Characterization of Cryogenic Fe—6Ni Steel Fracture Modes: a Three Dimensional Quantitative Analysis. 815-822A
Fracture Behavior in Medium-Carbon Martensitic Silicon- and Nickel-Steels. 1173-1178A

Fracture mechanics
Micromechanistic Expressions of Continuum Microscale Parameters for Stable Crack Growth. 2249-2253A

Fracture strength
Size Effects on the Microscopic Cleavage Stress, σ_F^*, in Martensitic Microstructures. 231-241A

Fracture strength, Cooling effects
Microstructures and Mechanical Properties of Melt-Quenched Ferritic Stainless Steels. 261-269A

Fracture strength, Microstructural effects
Microstructural Effects on the Cleavage Fracture Stress of Fully Pearlitic Eutectoid Steel. 1769-1786A

Fracture testing
Nomenclature for Metallographic Sections. 1095A

Fracture toughness
Microcrack Initiation and Acoustic Emission During Fracture Toughness Tests of A533B Steel. 843-852A
Fatigue Crack Growth and Fracture Toughness Behavior of an Al—Li—Cu Alloy. 1011-1026A
The Processing and Properties of Heavily Cold Worked Directionally Solidified Ni—W Eutectic Alloys. 1165-1171A
Hydrogen-Induced Subcritical Crack Growth of a 12Cr—1Mo Ferritic Stainless Steel. 1229-1240A
Mechanical Properties and Microstructure of Al—Li—Cu—Mg—Zr Die Forgings. 2007-2016A

Fracture toughness, Alloying effects
The Effect of Silicon and Nickel Additions on the Sulfide Spacing and Fracture Toughness of a 0.4 Carbon Low Alloy Steel. 669-678A
Microstructure and Creep Behavior of a Niobium Alloyed Cast Heat-Resistant 26% Chromium Steel. 691-696A

Fracture toughness, Stress effects
Influence of Prestrain History on Fracture Toughness Properties of Steels. 473-489A

Fracturing
See Brittle fracture
Transgranular fracture

Free energy
See also Free energy of formation
On the Gibbs Energy of Formation of Wustite. 179-184B
Legendre Polynomial Expansions of Thermodynamic Properties of Binary Solutions. 1057-1063A
Thermodynamic Properties and Defect Structure of Semiconducting Compound Phases: Tin Telluride. 1241-1245A

Free energy of dissociation
See Free energy of formation

Free energy of formation
Gibbs Free Energies of Formation of Molybdenum Carbide and Tungsten Carbide From 1173-1573K. 2031-2034A

Free machining steels
See Resulfurized steels

Fuel elements
See Nuclear fuel elements

Fuels
See Coke

Furnaces
See Basic converters
Blast furnaces
Bottom blown converters
Copper converters
Electric furnaces
Electric induction furnaces
Kilns
Rotary converters
Top blown converters
Vacuum arc furnaces

Fused salt plating
Phase Diagram Studies of the Systems KCl—K_3MoCl_6 and LiCl—K_3MoCl_6. 231-232B

Fused salts
Interfacial Tension and Flotation Characteristics of Liquid Metal—Sodium Flux Systems. 339-346B

Fused salts, Phases (state of matter)
Phase Diagram Studies of the Systems KCl—K_3MoCl_6 and LiCl—K_3MoCl_6. 231-232B

Fusion welding
See Arc welding
Gas metal arc welding
Gas tungsten arc welding
Laser beam welding
Plasma arc welding
Submerged arc welding

Gadolinium, Binary systems
Study of the Enthalpies of Formation in the Gd—Ni System. 777-780A

Galena, Reduction (chemical)
The Dissolution of Galena in Ferric Chloride Media. 5-17B
An Investigation of the Thermodynamics and Kinetics of the Ferric Chloride Brine Leaching of Galena Concentrate. 29-39B
Kinetics of Galena Dissolution in Ferric Chloride Solutions. 415-423B

Gallium, Recovering
Extraction Equilibria in the System $GaCl_3$—$AlCl_3$—HCl—H_2O—Tributyl Phosphate. 259-265B

Galvanic cells
See Electrolytic cells

Galvanized steels, Welding
Resistance Spot Welding of Galvanized Steel. I. Material Variations and Process Modifications. 879-885B
Resistance Spot Welding of Galvanized Steel. II. Mechanisms of Spot Weld Nugget Formation. 887-901B

Galvannealing
See Annealing

Gas holes
See Blowholes

Gas metal arc welding
A Model for the Silicon—Manganese Deoxidation of Steel Weld Metals. 1797-1807A

Gas permeability
See Permeability

Gas scrubbing
Removal of SO_2 With Oxygen in the Presence of Fe(III). 745-753B

Gas tungsten arc welding
Pressures Produced by Gas Tungsten Arcs. 601-607B
Solidification and Solidification Cracking in Nitrogen-Strengthened Austenitic Stainless Steels. 727-737A
Metal Vapors in Gas Tungsten Arcs. I. Spectroscopy and Monochromatic Photography. 1851-1863A
Metal Vapors in Gas Tungsten Arcs. II. Theoretical Calculations of Transport Properties. 1865-1871A
The Use of New PHACOMP in Understanding the Solidification Microstructure of Nickel Base Alloy Weld Metal. 2107-2116A

Gas turbines
Void Formation in INCONEL MA-754 by High Temperature Oxidation. 151-162A

Germanium, Alloying elements
Solidification of Nb—Ge Alloys in Long Drop Tubes. 973-981A

Gibbs free energy
See Free energy

Glass
See Metallic glasses

Glass transition temperature
A Theoretical Evaluation of Chemical Ordering and Glass Transition in Liquid Mg—Sn Alloys. 607-615A

Gold, Extraction
Potentiometric Studies on the Adsorption of $Au(CN)_2^-$ and $Ag(CN)_2^-$ Onto Activated Carbon. 523-528B
Studies on Role of Oxygen in the Adsorption of $Au(CN)_2^-$ and $Ag(CN)_2^-$ Onto Activated Carbon. 529-533B

Grain boundaries
See also Grain sub boundaries
Carbon Segregation to Grain Boundaries in Rapidly Solidified Ni_3Al. 2084-2086A

Grain boundaries, Heating effects
On the Kinetics of the Spreading of Extrinsic Grain Boundary Dislocations. 1967-1975A

Grain boundary migration
Serrated Grain Boundary Formation During High Temperature Fatigue. 1100-1102A

Grain boundary sliding
Reexamination of Grain-Boundary Sliding by Diffusion. 1949-1953A

Grain growth
Grain Growth Characteristics and Magnetic Properties of Rapidly Quenched Silicon Steel Ribbons. 1295-1299A
New Information on Texture Development in Regular and High-Permeability Grain-Oriented Silicon Steels. 1301-1312A
High Temperature Grain Growth During Slab Reheating of Oriented 3% Si—Fe Made Using Continuous Casting. 1335-1346A
Grain Growth in Capped Steel. 1907-1913A

Grain orientation
Orienting Grains With [110] Surface Traces. 961-966A
Description of the Intercrystalline Structure Distribution in Polycrystalline Materials. 2199-2207A

Grain orientation, Deformation effects
Formation of the Goss Orientation Near the Surface of 3% Silicon Steel During Hot Rolling. 1323-1334A

Grain refinement
Discussion of "The Grain Refining of Aluminum and Phase Relationships in the Al—Ti—B System" and Reply. 349-351A
Superplasticity in a Thermomechanically Processed High-Magnesium, Al—Mg Alloy. 1035-1041A
Development of Al—Ti—C Grain Refiners Containing TiC. 2127-2137A

Grain refinement, Alloying effects
The Influence of Iron and Chromium on the Microstructure of Cast Al—Si—Mg Alloys. 45-52A

Grain size
A Model for Yielding in Anisotropic Metals. 107-114A
On the Microstructure and Mechanical Behavior of Melt-Spun Fe—24Ni—0.5C Ribbons: Effect of Austenite Grain Size. 127-136A
Application of Microstructure Modeling to the Kinetics of Proeutectoid Ferrite Transformation in Hot-Rolled Microalloyed Steels. 1625-1629A

Grain size, Cooling effects
Microstructures and Mechanical Properties of Melt-Quenched Ferritic Stainless Steels. 261-269A

Grain size, Heating effects
Factors Affecting the Final Grain Size of Decarburized Lamination Steels. 1277-1285A

Grain size, Impurity effects
The Influence of Iron and Chromium on the Microstructure of Cast Al—Si—Mg Alloys. 45-52A

Grain structure
Origin and Development of Through-the-Thickness Variations of Texture in the Processing of Grain-Oriented Silicon Steel. 1313-1322A
Fault Structures in Rapidly Quenched Ni—Mo Binary Alloys. 2291-2294A

Grain structure, Impurity effects
Retained Carbide Distribution in Intercritically Austenitized 52100 Steel. 31-36A

Grain sub boundaries, Stress effects
Changes in the Subboundary Mesh Size With Creep Strain in 304 Stainless Steel. 2093-2097A

Gravitation
Microstructural Variations Induced by Gravity Level During Directional Solidification of Near-Eutectic Iron—Carbon Type Alloys. 1121-1130A
The Effect of Gravity Level on the Average Primary Dendritic Spacing of a Directionally Solidified Superalloy. 2301-2303A

Gravity
See Gravitation

Gravity die casting
See Permanent mold casting

Gray iron
See Nodular iron

Grinding mills
See Ball mills

Growth
See Grain growth

Hafnium, Alloying elements
Effect of Fluid Flow and Hafnium Content on Macrosegregation in the Directional Solidification of Nickel Base Superalloys. 347-356B

Halides
See Bromides
Chlorides

Halogenation
See Chlorination

Halogens
See Chlorine

Hardenability, Composition effects
A Comparative Study of the Heat Affected Zone (HAZ) Properties of Boron Containing Low Carbon Steels. 1529-1536A

Hardening
See Aging (artificial)
Carburizing
Precipitation hardening
Solution strengthening
Strain aging
Strain hardening
Structural hardening

Hardinge mills
See Ball mills

Hardness, Cooling effects
Microstructures and Mechanical Properties of Melt-Quenched Ferritic Stainless Steels. 261-269A

Hazelett process
See Continuous casting

Heat affected zone, Mechanical properties
A Comparative Study of the Heat Affected Zone (HAZ) Properties of Boron Containing Low Carbon Steels. 1529-1536A

Heat flow
See Heat transmission

Heat flux
See Heat transmission

Heat measurement
See Calorimetry

Heat of decomposition
See Heat of formation

Heat of dissociation
See Heat of formation

Heat of dissolution
See Heat of solution

Heat of formation
Study of the Enthalpies of Formation in the Gd—Ni System. 777-780A
Thermodynamics of Gaseous SbS. 913-914B
Standard Enthalpies of Formation of $TiSi_2$ and VSi_2 by High-Temperature Calorimetry. 1217-1221A

Heat of mixing
Calorimetric and Emf Studies on Liquid Li—Sn Alloys. 791-796B

Heat of solution
Thermotransport of Carbon in Two-Phase V—C and Nb—C Alloys. 1955-1966A

Heat resistant alloys
See Superalloys

Heat transfer
Computer Modeling of Heat Flow in Welds. 587-600B
A Mathematical Model of the Planar Flow Melt Spinning Process. 695-703B
The Role of Transient Convection in the Melting and Solidification in Arc Weldpools. 735-744B
The Air-Gap Formation Process at the Casting/Mold Interface and the Heat Transfer Mechanism Through the Gap. 833-844B
Heat and Moisture Transfer in Sand Molds Containing Water. 903-911B
Heat Transfer and Fluid Flow in the Welding Arc. 1139-1148A

Heat transmission
Heat Flow in Copper Converters. 677-685B
Three-Dimensional Convection in Laser Melted Pools. 2265-2270A
Computer Simulation of Convection in Moving Arc Weld Pools. 2271-2277A

Heat treatment
See Aging (artificial)
Annealing
Austenitizing
Carburizing
Grain refinement
Homogenizing
Isothermal annealing
Normalizing (heat treatment)
Precipitation hardening
Quenching and tempering
Spheroidizing
Tempering

Heats (energies)
See Heat of formation
Heat of mixing
Heat of solution

Heavy metals
See Antimony
Bismuth
Lead (metal)
Mercury (metal)
Tin

Heliarc welding
See Gas tungsten arc welding

Helmholtz free energy
See Free energy

High alloy steels
See Austenitic stainless steels
Duplex stainless steels
Ferritic stainless steels
Stainless steels

High strength low alloy steels, Mechanical properties
The Ductility of a HSLA Steel at Temperatures Below 300K. 697-702A
High Temperature Ductility Loss in Carbon—Manganese and Niobium-Treated Steels. 1995-2006A

High strength low alloy steels, Microstructure
Microstructure of a Quenched and Tempered Copper-Bearing High-Strength Low-Alloy Steel. 791-798A

High strength low alloy steels, Phase transformations
Application of Microstructure Modeling to the Kinetics of Proeutectoid Ferrite Transformation in Hot-Rolled Microalloyed Steels. 1625-1629A

High strength low alloy steels, Structural hardening
Effect of Tempering Temperature on the Work-Hardening Rate of Five HSLA Steels. 307-313A

High strength low alloy steels, Welding
Inclusion Phases and the Nucleation of Acicular Ferrite in Submerged Arc Welds in High Strength Low Alloy Steels. 1611-1623A

High strength steels, Alloy development
Effect of Copper Precipitation on the Development of Recrystallization Textures Through Continuous Annealing of Low-Carbon Sheet Steel. 621-633A

High strength steels, Corrosion
Stress Corrosion Cracking in High Strength Steel Under Mode III Loading. 711-716A
Hydrogen-Induced Delayed Fracture Under Mode II Loading. 717-725A
Fatigue Crack Growth Rates in a Pressure Vessel Steel Under Various Conditions of Loading and the Environment. 1837-1849A

High strength steels, Mechanical properties
Size Effects on the Microscopic Cleavage Stress, σ_F^*, in Martensitic Microstructures. 231-241A
The Effect of Silicon and Nickel Additions on the Sulfide Spacing and Fracture Toughness of a 0.4 Carbon Low Alloy Steel. 669-678A
Microcrack Initiation and Acoustic Emission During Fracture Toughness Tests of A533B Steel. 843-852A

HIP
See Hot isostatic pressing

Homogenizing
Influence of Soaking Treatments on Hot Ductility of Al—4.85Mg Alloys Containing Manganese. 833-841A

Honeycomb construction, Mechanical properties
Examination of the Titanium Environment in a René 41 Nickel Base Superalloy by X-Ray Absorption Spectroscopy. 739-741A

Hot brittleness
See Brittleness

Hot compacting
See Compacting

Hot cracking (welds)
See Weld defects

Hot dip coating
See Aluminizing

Hot ductility
See Ductility

Hot gas corrosion
Stability of the Chromia Layer on Steels in Flowing Nonequilibrium H_2—H_2O—CH_4—CO Mixtures at 950°C. 915-921A

Hot hardness
See Hardness

Hot isostatic pressing
An Empirical Model for Hot Isostatic Pressing of Metal Powders. 1977-1984A

Hot pressing
See Hot isostatic pressing

Hot rolling
Formation of the Goss Orientation Near the Surface of 3% Silicon Steel During Hot Rolling. 1323-1334A

Hot roughing
See Hot rolling

Hot shortness
See Brittleness

Hot strength
See Tensile strength

Hot stretch forming
See Stretch forming

Hot tensile strength
See Tensile strength

Hot working
See Hot rolling

Hydrochloric acid leaching
Leaching of Cinnabar With HCl-Thiourea Solutions as the Basis of a Process for Mercury Obtention. 443-448B

Hydrodynamics
Mathematical Modeling of Flows in Large Tundish Systems in Steelmaking. 449-459B
Model Study of Mixing and Mass Transfer Rates of Slag-Metal in Top and Bottom Blown Converters. 461-469B
Some Fundamental Aspects of Mixing in Metallurgical Reaction Systems. 487-490B

Hydrogen
See also Deuterium
Stresses Induced in Iron-Ore Pellets by Hydrogen Reduction. 217-227B

Hydrogen, Diffusion
The Trapping and Transport Phenomena of Hydrogen in Nickel. 181-187A
Effects of Nitrogen on the Mechanical Behavior of Hydrogenated Vanadium, Niobium, and Tantalum. 527-535A
Hydrogen and Deuterium Diffusion in Vanadium—Niobium Alloys. 645-650A
Hydrogen Transport During Deformation in Nickel. I. Polycrystalline Nickel. 861-867A
Hydrogen Transport During Deformation in Nickel. II. Single Crystal Nickel 869-875A
Phase Transformation of Austenitic Stainless Steels as a Result of Cathodic Hydrogen Charging. 1593-1600A
On the Effective Hydrogen Permeability in Metastable β Titanium Alloy, Niobium and 2.25Cr—1Mo Ferritic Steel. 2086-2090A

Hydrogen, Impurities
Effects of Oxygen on the Mechanical Behavior of Hydrogenated Vanadium, Niobium, and Tantalum. 853-859A

Hydrogen compounds
See Phosphoric acid

Hydrogen embrittlement
The Trapping and Transport Phenomena of Hydrogen in Nickel. 181-187A
Stress Corrosion Cracking in High Strength Steel Under Mode III Loading. 711-716A
Hydrogen-Induced Delayed Fracture Under Mode II Loading. 717-725A
A Comparative Study of the Embrittlement of Monel 400 at Room Temperature by Hydrogen and by Mercury. 889-898A
The Influence of Precipitated Austenite on Hydrogen Embrittlement in 5.5Ni Steel. 1157-1164A
The Effects of Interstitials and Hydrogen-Interstitial Interactions on Low Temperature Hardening and Embrittlement in Vanadium, Niobium, and Tantalum. 1179-1189A
Hydrogen-Induced Subcritical Crack Growth of a 12Cr—1Mo Ferritic Stainless Steel. 1229-1240A
Hydrogen Degradation of Spheroidized AISI 1020 Steel. 1485-1487A
Effect of Notch Root Radius on Stress Intensity in Mode I and Mode III Loading. 1633-1637A
Absence of Hydrogen Influence on the Mechanical Stability of Retained Austenite in a 0.2C/12Cr/1Mo Steel. 1876-1877A
The Interaction of Hydrogen With the Interface of Al_2O_3 Particles in Iron. 2183-2186A

Hydrogen embrittlement, Impurity effects
The Influence of Minute Alloy Elements (Carbon, Nitrogen, Sulfur, Manganese) on the Hydrogen Embrittlement of α-Iron. 331-337A
A Study of the Hydrogen-Induced Degradation of Two Steels Differing in Sulfur Content. 2255-2263A

Hydrogen potential
See Electrode potentials

Hydromagnetic stability
See Magnetohydrodynamics

Hydromechanics
See Hydrodynamics

Hydrometallurgy
The Dissolution of Galena in Ferric Chloride Media. 5 [illegible]
The Leaching of Chalcopyrite With Ferric Chloride. 19-28B
An Investigation of the Thermodynamics and Kinetics of the Ferric Chloride Brine Leaching of Galena Concentrate. 29-39B
Diffusivity of Cobalt and Nickel Compounds as a Function of Concentration and Temperature. 425-432B
Potentiometric Studies on the Adsorption of $Au(CN)_2^-$ and $Ag(CN)_2^-$ Onto Activated Carbon. 523-528B
Studies on Role of Oxygen in the Adsorption of $Au(CN)_2^-$ and $Ag(CN)_2^-$ Onto Activated Carbon. 529-533B
Chemical Equilibrium Studies on the Iron(III)—Sulfuric Acid/β-Alkenyl 8 Hydroxy—Quinoline—Xylene System. 615-620B

Water and Solute Activities of H_2SO_4—$Fe_2(SO_4)_3$—H_2O and HCl—$FeCl_3$—H_2O Solution Systems. II. Activities of Solutes. 621-627B
Leaching Kinetics of Natural Cobalt Triarsenide in Chlorine Solutions. 629-637B

Hypereutectic structures, Heating effects
Growth of Silicon Particles in an Aluminum Matrix. 2139-2152A

Hypereutectoid structures
Development of Ferrous Laminated Composites With Unique Microstructures by Control of Carbon Diffusion. 1517-1527A
Effects of Copper on Proeutectoid Cementite Precipitation. 2163-2173A

Hypoeutectic structures, Heating effects
Growth of Silicon Particles in an Aluminum Matrix. 2139-2152A

Hysteresis, Microstructural effects
Grain Growth Characteristics and Magnetic Properties of Rapidly Quenched Silicon Steel Ribbons. 1295-1299A

Image analysis
Surface Oxide on fcc Iron—Nickel Alloys. 163-167A

Immersion coating
See Aluminizing

Impact strength
Fracture Behavior in Medium-Carbon Martensitic Silicon- and Nickel-Steels. 1173-1178A

Impact strength, Impurity effects
Low Temperature Impact Properties of Phosphorus and Sulfur Doped and Sensitized Type 304 Stainless Steel. 663-668A

Impact strength, Microstructural effects
Microstructure—Mechanical Property Relationships in Isothermally Transformed Vanadium Steels. 1191-1202A
Effect of Microstructure on Strength and Toughness of Heat-Treated Low Alloy Structural Steels. 1203-1209A

Impact toughness
See Impact strength

Impermeability
See Permeability

Inclusions
See Nonmetallic inclusions

Induction furnaces
See Electric induction furnaces

Inert gas welding
See Gas tungsten arc welding

Ingot casting
An Ice-Water Model Study on Formation of Blowhole-Free Skin With Reference to Solidification of Steel. 553-564B
Processing-Structure Characterization of Rheocast IN-100 Superalloy. 2049-2062A

Initiation
See Crack initiation

Injection
A Multi-Phase Model for Plumes in Powder Injection Refining Processes. 77-85B
A Pressurized Screw Feeder for Powder Injection. 229-231B

Inorganic acids
See Phosphoric acid

Integrated circuits
Diffusional Breakdown of a Silver Diffusion Barrier in a Cu—Ag—Ni Diffusion Triple. 933-944A

Interface reactions
The Diffusion Bonding of Zr—2.5Nb to Steel. 429-434A
Diffusional Breakdown of a Silver Diffusion Barrier in a Cu—Ag—Ni Diffusion Triple. 933-944A
The Effect of Thermal Exposure on the Microstructure and Fiber/Matrix Interface of an Al_2O_3/Al Composite. 1075-1080A

Interfaces
Interfacial Tension and Flotation Characteristics of Liquid Metal—Sodium Flux Systems. 339-346B
An *In Situ* HVEM Study of Dislocation Generation at Al/SiC Interfaces in Metal Matrix Composites. 379-389A

Interfacial surface tension
See Surface tension

Intermetallic compounds
See Intermetallics

Intermetallic phases
The Influence of Iron and Chromium on the Microstructure of Cast Al—Si—Mg Alloys. 45-52A
Deformation and Recrystallization Textures in Commercially Pure Aluminum. 253-259A
Nature of Large Ti_4Cu_2O Particles Formed During Annealing of $Cu_{55}Ti_{45}$ Metallic Glass Ribbons. 575-581A
Study of the Enthalpies of Formation in the Gd—Ni System. 777-780A

Intermetallic phases, Alloying effects
The Effects of Tantalum on the Microstructure of Two Polycrystalline Nickel-Base Superalloys: B-1900 + Hafnium and MAR-M247. 1891-1905A

Intermetallics
See also A15 compounds

Intermetallics, Crystal growth
Rate of Dissolution of Solid Nickel in Liquid Tin Under Static Conditions. 281-289B

Internal energy
Orientation and Strain Dependence of Stored Energy of Cold Work in Axisymmetric Copper. 513-517A

Internal friction
Orientation and Strain Dependence of Stored Energy of Cold Work in Axisymmetric Copper. 513-517A

Internal oxidation
Determination of Diffusion Coefficient of Oxygen in γ-Iron From Measurements of Internal Oxidation in Fe—Al Alloys. 221-229A
Examination of the Titanium Environment in a René 41 Nickel Base Superalloy by X-Ray Absorption Spectroscopy. 739-741A
Metallic Surface Layers Deposited by Diffusional Creep During Internal Oxidation. 746-749A
The Effect of Thermal Exposure on the Microstructure and Fiber/Matrix Interface of an Al_2O_3/Al Composite. 1075-1080A

Internal stress
See Residual stress

Interstitial defects
Complex Defects in the Oxidation of Uranium. 911-914A

Iron
See also Alloy steels
Cast iron
Chromium iron
Nodular iron

Iron, Alloying elements
Particle Size and Orientation Effects on Softening in a Copper Matrix Containing Rod-Shaped Iron Particles. 1751-1755A

Iron, Binary systems
Magnetic Contributions to the Thermodynamic Functions of Alloys and the Phase Equilibria of Fe—Ni System Below 1200K. 1361-1372A
A Thermodynamic Analysis of the Phase Equilibria of the Fe—Ni System Above 1200K. 1373-1380A

Iron, Diffusion
Measurement of Tracer Diffusivities of Ca^{45} and Fe^{59} in Silica Saturated FeO—CaO—SiO_2 Melts With the Porous Frit Technique. 497-501B
Anomalously Fast Diffusion in the Fe—Zn System. 1523-1527A

Iron, Extraction
Chemical Equilibrium Studies on the Iron(III)—Sulfuric Acid/β-Alkenyl 8 Hydroxy—Quinoline—Xylene System. 615-620B
Water and Solute Activities of H_2SO_4—$Fe_2(SO_4)_3$—H_2O and HCl—$FeCl_3$—H_2O Solution Systems. II. Activities of Solutes. 621-627B

Iron, Impurities
The Influence of Iron and Chromium on the Microstructure of Cast Al—Si—Mg Alloys. 45-52A

Iron, Mechanical properties
The Influence of Minute Alloy Elements (Carbon, Nitrogen, Sulfur, Manganese) on the Hydrogen Embrittlement of α-Iron. 331-337A

Iron, Oxidation
Determination of Diffusion Coefficient of Oxygen in γ-Iron From Measurements of Internal Oxidation in Fe—Al Alloys. 221-229A

Iron, Phase transformations
The Alpha ⇄ Gamma Transformation in Iron Powders. 37-44A

Iron, Quaternary systems
A Solid-State EMF Study of Ternary Ni—S—O, Fe—S—O, and Quaternary Fe—Ni—S—O. 133-146B
Phase Relationships in the Iron-Rich Fe—Cr—Ni—C System at Solidification Temperatures. 1461-1469A

Iron, Quinary systems
Phase Relationships in the Fe—Cr—Mn—Ni—C System at Solidification Temperatures. 1825-1835A

Iron, Reactions (chemical)
Rates of Dissolution of Solid Iron, Cobalt, Nickel, and Silicon in Liquid Copper and Diffusion Rate of Iron From Liquid Cu—Fe Alloy Into Liquid Copper. 291-305B

Iron, Solubility
Nitrogen Solubility in Liquid Iron and Fe—Mn Alloys. 238-239B
The Solubility of Boron in Iron. 1481-1483A

Iron, Ternary systems
Thermodynamics of the Fe—Mo—C System at 985K. 391-398A
Direct Use of the Chemical Potential Function in Thermodynamic Modeling of Alloy Phase Diagrams. 1471-1477A
Balance of Distribution of Some Transition Metals Between the (M', M")B and (M', M")$_2$B Phases. 1665-1669A
Experimental and Theoretical Study of the Phase Equilibria in the Fe—Ni—W System. 1809-1823A

Iron and steel making
See also Ironmaking
LD process
Oxygen steel making
Quelle-Basic oxygen process
Steel making
On the Gibbs Energy of Formation of Wustite. 179-184B
Stresses Induced in Iron-Ore Pellets by Hydrogen Reduction. 217-227B
The Composition and Temperature Dependence of the Sulfide Capacity of Metallurgical Slags. 331-337B

Iron base alloys
See Ferrous alloys

Iron compounds
See also Iron oxides
Magnetite
Pyrrhotite
Taconite
Wustite

Iron compounds, Mechanical properties
Fracture of Fe_3Al. 2298-2300A

Iron compounds, Ternary systems
Electrochemical Determination of Thermodynamic Properties and X-Ray Diffraction Investigation of the Fe_3O_4—$ZnFe_2O_4$ System. 515-521B

Iron ores
See also Magnetite
Pyrrhotite
Taconite
Modeling the Development of Strength in Pellets. 479-485B

Iron ores, Reduction (chemical)
Mechanism of Growth of Metallic Phase in Direct Reduction of Iron Bearing Oolites. 433-442B

Iron oxides
See also Magnetite
Wustite

Iron oxides, Reduction (chemical)
Application of Thermodynamic and Kinetic Principles in the *Reduction of Metal Oxides by Carbon in a Plasma Environment.* 197-207B

Iron powder
See Iron

Ironmaking
An *Investigation of the Critical Influence of Potassium on the* Reduction of Wustite. 657-663B
Development of an Analytical Equation for Calculation of the Blast Furnace Fuel Rate. 705-724B

Isomer shift
See Mossbauer spectroscopy

Isostatic pressing
See Hot isostatic pressing

Isothermal annealing
Lower Bainite With Midrib in Hypereutectoid Steels. 1113-1120A

Isothermal treatment
See Isothermal annealing

Joints
See Transition joints
Welded joints

Junghans Rossi casting
See Continuous casting

Kaldo process
See Oxygen steel making

Killed steels
See Aluminum killed steels

Kilns
Reduction of Phosphate Ores by Carbon. *I. Process Variables* for Design of Rotary Kiln System. 861-868B

Kinetics
See also Reaction kinetics
Rate of Dissolution of Solid Nickel in Liquid Tin Under Static Conditions. 281-289B
Acidic Rate- and Flow-Controlled Dissolution of Uraninite Ores. 405-413B
Leaching of Cinnabar With HCl-Thiourea Solutions as the Basis of a Process for Mercury Obtention. 443-448B
Some Fundamental Aspects of Mixing in Metallurgical Reaction Systems. 487-490B
Measurement of Tracer Diffusivities of Ca^{45} and Fe^{59} in Silica Saturated FeO—CaO—SiO_2 Melts With the Porous Frit Technique. 497-501B
The Nitrogen Reaction Between Carbon Saturated Iron and *Na_2O—SiO_2 Slag. II. Kinetics.* 541-545B
The Study of Desulfurization Kinetics in Grain Oriented 3% Silicon Iron. 1347-1351A
Analysis of Transformation Kinetics by Nonisothermal Dilatometry. 1441-1445A
Nucleation, Growth, and Overall Transformation Kinetics of *Grain Boundary Allotriomorphs of Proeutectoid α in* Ti—3.2 at.% Co and Ti—6.6 at.% Cr Alloys. 1703-1715A

Kryptol electric furnaces
See Electric furnaces

Ladle metallurgy
Some Fundamental Aspects of Mixing in Metallurgical Reaction Systems. 487-490B
Mixing Models for Gas Stirred Metallurgical Reactors. 725-733B
Soda Slag System for Hot Metal Dephosphorization. 797-804B

Lamina
See Laminates

Laminates, Development
Development of Ferrous Laminated Composites With Unique Microstructures by Control of Carbon Diffusion. 1517-1527A

Laminates, Mechanical properties
Structure-Performance Maps of Polymeric, Metal, and Ceramic Matrix Composites. 1547-1559A

Lanthanide metal compounds
See Samarium compounds

Lanthanide metals
See Cerium
Gadolinium

Laser beam welding
Three-Dimensional Convection in Laser Melted Pools. 2265-2270A

Laser welding
See Laser beam welding

Lattice defects
See Crystal defects

Lattice vacancies
Complex Defects in the Oxidation of Uranium. 911-914A

LD process
Model Study of Mixing and Mass Transfer Rates of Slag-Metal in Top and Bottom Blown Converters. 461-469B

Leaching
See also Acid leaching
Bacterial leaching
Hydrochloric acid leaching
The Dissolution of Galena in Ferric Chloride Media. 5-17B
The Leaching of Chalcopyrite With Ferric Chloride. 19-28B
An Investigation of the Thermodynamics and Kinetics of the Ferric Chloride Brine Leaching of Galena Concentrate. 29-39B
Kinetics of Galena Dissolution in Ferric Chloride Solutions. 415-423B
Diffusivity of Cobalt and Nickel Compounds as a Function of Concentration and Temperature. 425-432B
Leaching Kinetics of Natural Cobalt Triarsenide in Chlorine Solutions. 629-637B

Lead (metal), Binary systems
Activity of Arsenic in Molten Lead. 235-238B
Effect of Small Additions of Silver on the Eutectic Temperature in the Lead—Tin System. 829-832B

Lead (metal), Extraction
The Dissolution of Galena in Ferric Chloride Media. 5-17B
An Investigation of the Thermodynamics and Kinetics of the Ferric Chloride Brine Leaching of Galena Concentrate. 29-39B
The Settling of Metallic Lead From Lead Blast Furnace Slag. 267-270B
Kinetics of Galena Dissolution in Ferric Chloride Solutions. 415-423B
Reduction of Lead Minerals by CO/CO_2 Gas Mixtures: Application of the Grain Model. 575-586B
PbO Solubility in Lead-Blast Furnace Slags. 817-827B

Lead (metal), Impurities
A Kinetic Model for the Vacuum Refining of Inductively Stirred Copper Melts. 87-103B

Lead (metal), Physical properties
Interfacial Tension and Flotation Characteristics of Liquid Metal—Sodium Flux Systems. 339-346B

Lead (metal), Powder technology
An Empirical Model for Hot Isostatic Pressing of Metal Powders. 1977-1984A

Lead base alloys, Crystal growth
The Effect of Convection on the Dendrite to Eutectic Transition. 991-1000A
Dendrite Characteristics in Directionally Solidified Pb—8Au and Pb—3Pd Alloys. 2279-2290A

Lead base alloys, Mechanical properties
An Examination of Class A to Class M Transition in Pb—9Sn and Other Alloys. 1447-1453A

Lead compounds, Reduction (chemical)
Kinetics of Reduction of Lead Oxide in Liquid Slag by Carbon in Iron. 271-279B
Reduction of Lead Minerals by CO/CO_2 Gas Mixtures: Application of the Grain Model. 575-586B

Lead compounds, Solubility
PbO Solubility in Lead-Blast Furnace Slags. 817-827B

Lead ores
See Galena

Life
See Fatigue life

Light metals
See Aluminum
Aluminum base alloys
Magnesium
Magnesium base alloys
Titanium
Titanium base alloys

Light water reactors
See Boiling water reactors
Pressurized water reactors

Lime
Discussion of "Lime-Enhanced Reduction of Sulfide Concentrates: a Thermodynamic Discussion" and Authors' Reply. 914-918B

Lime, Reactions (chemical)
Lime-Enhanced Reduction of Sulfide Concentrates: a Thermodynamic Discussion. 185-196B

Line defects
See Dislocations

Linz Donawitz process
See LD process

Liquid metal embrittlement
A Comparative Study of the Embrittlement of Monel 400 at Room Temperature by Hydrogen and by Mercury. 889-898A
Liquid Cesium Tellurium-Induced Fatigue Embrittlement of *Cold-Worked 316 Stainless Steel.* 2090-2093A

Liquid metals, Physical properties
Interfacial Tension and Flotation Characteristics of Liquid Metal—Sodium Flux Systems. 339-346B
A Calculation of Viscosities for Iron—Metalloid Liquids. 901-903A

Liquid metals, Reactions (chemical)
Activity Coefficient of Oxygen in Copper—Tellurium Melts. 171-177B
Rate of Dissolution of Solid Nickel in Liquid Tin Under Static Conditions. 281-289B

Rates of Dissolution of Solid Iron, Cobalt, Nickel, and Silicon in Liquid Copper and Diffusion Rate of Iron From Liquid Cu—Fe Alloy Into Liquid Copper. 291-305B

Liquid phase diffusion
See Diffusion

Liquid phase sintering
Processing of Iron—Titanium Powder Mixtures by Transient Liquid Phase Sintering. 205-213A
An Analysis of the Surface Menisci in a Mixture of Liquid and Deformable Grains. 325-330A
The Effect of the Binder Phase Melting Temperature on Enhanced Sintering. 903-906A
Formation of Copper Pockets in Iron Grains During the Sintering of Fe—Cu Alloys. 1429-1431A
The Critical Grain Size for Liquid Flow Into Pores During Liquid Phase Sintering. 1915-1919A
Effect of Entrapped Inert Gas on Pore Filling During Liquid Phase Sintering. 2175-2182A

Lithium, Alloying elements
Microstructural Characterization of Rapidly Solidified Al—Li—Co Powders. 73-91A
Fatigue Crack Growth and Fracture Toughness Behavior of an *Al—Li—Cu Alloy*. 1011-1026A
The Effect of Thermal Exposure on the Microstructure and Fiber/Matrix Interface of an Al_2O_3/Al Composite. 1075-1080A
Mechanical Properties and Microstructure of Al—Li—Cu—Mg—Zr Die Forgings. 2007-2016A

Lithium, Binary systems
Calorimetric and Emf Studies on Liquid Li—Sn Alloys. 791-796B

Lithium, Diffusion
Lithium Depletion During Heat Treatment of Aluminum—Lithium Alloys. 635-643A

Lithium base alloys, Thermal properties
Calorimetric and Emf Studies on Liquid Li—*Sn Alloys*. 791-796B

Lixiviation
See Leaching

Low alloy steels
See also Boron steels
Carbon manganese steels
Electrical steels
Resulfurized steels
Silicon manganese steels
Silicon steels

Low alloy steels, Phase transformations
Nucleation Kinetics of Proeutectoid Ferrite at Austenite *Grain Boundaries in Fe—C—X Alloys*. 1385-1397A
The Kinetics of Ferrite Nucleation at Austenite Grain Edges in Fe—C and Fe—C—X Alloys. 1399-1407A

Low cycle fatigue, Microstructural effects
Orientation and Temperature Dependence of Some Mechanical Properties of the Single-Crystal Nickel-Base Superalloy René N4. II. Low Cycle Fatigue Behavior. 497-505A

Macrofractography
See Fractography

Magnesium, Binary systems
A Theoretical Evaluation of Chemical Ordering and Glass Transition in Liquid Mg—Sn Alloys. 607-615A

Magnesium base alloys, Composite materials
Structure-Performance Maps of Polymeric, Metal, and Ceramic Matrix Composites. 1547-1559A

Magnesium base alloys, Mechanical properties
Dependence of Total Elongations of Superplastic Materials on m. 685-690A

Magnetic alloys, Phases (state of matter)
Discussion of "Miscibility Gap in Fe—Ni—Al and Fe—Ni—Al—Co Systems" and "Role of Alloying Elements in Phase Decomposition in Alnico Magnet Alloys". 1629-1632A

Magnetic fields
Magnetic Contributions to the Thermodynamic Functions of Alloys and the Phase Equilibria of Fe—Ni System Below 1200K. 1361-1372A

Magnetic flux welding
See Gas metal arc welding

Magnetic force
See Magnetic fields

Magnetic hysteresis
See Hysteresis

Magnetic materials
See Magnetic alloys
Magnetite

Magnetic permeability, Composition effects
The Effect of Manganese and Sulfur Contents on the Magnetic Properties of Cold Rolled Lamination Steels. 1259-1266A

Magnetic permeability, Microstructural effects
The Effect of Thermomechanical History Upon the Microstructure and Magnetic Properties of Nonoriented Silicon Steels. 1267-1275A

Magnetic properties
See Coercive force
Magnetic permeability

Magnetic susceptibility
See Magnetic permeability

Magnetite, Reduction (chemical)
Dissolution of Solid Magnetite in Fe—S—O Melt. 639-645B

Magnetization
Directional Solidification and Annealing of $Mn_{55}Al_{45}$ Alloys. 1247-1249A

Magnetohydrodynamic waves
See Magnetohydrodynamics

Magnetohydrodynamics
Turbulent Recirculating Flow in Induction Furnaces: a Comparison of Measurements With Predictions Over a Range of Operating Conditions. 687-693B

Magnets
See Permanent magnets

Manganese, Alloying elements
Nitrogen Solubility in Liquid Iron and Fe—Mn Alloys. 238-239B
Decomposition Characteristics of Al—Mn—Zr Alloys Rapidly-Quenched From the Melt. 799-806A
The Effect of Manganese and Sulfur Contents on the Magnetic Properties of Cold Rolled Lamination Steels. 1259-1266A
Compositional Analysis of the Icosahedral Phase in Rapidly Quenched Al—Mn and Al—V Alloys. 1657-1664A
On the Microstructure of Rapidly Solidified Al—15Mn Ribbons: Effect of Annealing in the Temperature Range 300-600°C. 1671-1683A

Manganese, Binary systems
Thermodynamics of the Mn—P System. 777-783B

Manganese, Diffusion
Analysis of Solute Distribution in Dendrites of Carbon Steel With δ/γ Transformation During Solidification. 845-859B

Manganese, Quinary systems
Phase Relationships in the Fe—Cr—Mn—Ni—C System at Solidification Temperatures. 1825-1835A

Manganese, Ternary systems
Balance of Distribution of Some Transition Metals Between the (M', M")B and (M', M")$_2$B Phases. 1665-1669A

Manganese base alloys, Magnetic properties
Directional Solidification and Annealing of $Mn_{55}Al_{45}$ Alloys. 1247-1249A

Manganese steels
See also Silicon manganese steels

Manganese steels, Mechanical properties
Microstructural Dependence of Iron—High Manganese Tensile Behavior. 537-547A
Effect of Aluminum Content on Low Temperature Tensile *Properties in Cryogenic Fe/Mn/Al/Nb/C Steels*. 2097-2098A

Manganese steels, Phase transformations
Nucleation Kinetics of Proeutectoid Ferrite at Austenite *Grain Boundaries in Fe—C—X Alloys*. 1385-1397A
The Kinetics of Ferrite Nucleation at Austenite Grain Edges in Fe—C and Fe—C—X Alloys. 1399-1407A

Manganese steels, Phases (state of matter)
On the Critical Nucleus Composition of Ferrite in an Fe—C—Mn Alloy. 1381-1384A

Manganese steels, Structural hardening
Strain Hardening of Hadfield Manganese Steel. 1725-1737A

Martensite, Crystal growth
Lower Bainite With Midrib in Hypereutectoid Steels. 1113-1120A

Martensitic transformations
Microstructural Effects of Martensitic Transformation Cycling of a Cu—Zn—Al Alloy: Vestigial Structures in the Parent Phase. 195-203A
Deformation of Martensite in a Polycrystalline Cu—Zn—Al Alloy. 945-959A
The Chemical Composition of Precipitated Austenite in 9Ni Steel. 967-972A
The Influence of Precipitated Austenite on Hydrogen Embrittlement in 5.5Ni Steel. 1157-1164A
Phase Transformation of Austenitic Stainless Steels as a *Result of Cathodic Hydrogen Charging*. 1593-1600A
Roles of Dislocations and Grain Boundaries in Martensite Nucleation. 1693-1702A
Martensitic *Transformation of Cu—2Be Alloys Induced by Explosive Cladding*. 1685-1690A

Martensitic transformations, Composition effects
Deformation and Transition Behavior Associated With the R-Phase in Ti—Ni Alloys. 53-63A

Mass transfer
Model Study of Mixing and Mass Transfer Rates of Slag-Metal in Top and Bottom Blown Converters. 461-469B
Heat Transfer and Fluid Flow in the Welding Arc. 1139-1148A

Master alloys, Phases (state of matter)
The Aluminum—Strontium Phase Diagram. 1250-1253A

Materials testing
See Depth profiling

Mathematical analysis
See also Numerical analysis
An Analysis of Radial Segregation for Different Sized Spherical Solids in Rotary Cylinders. 247-257B
Estimation of Diffusion Path Slopes at Zero-Flux Plane *Compositions*. 362-364A
The C.L. m—δ Equation of Superplasticity. 679-684A
Development of an Analytical Equation for Calculation of the *Blast Furnace Fuel Rate*. 705-724B
Legendre Polynomial Expansions of Thermodynamic Properties of Binary Solutions. 1057-1063A
Computation of Thermodynamic Properties of Multi-Component Solutions: Extension of Toop Model. 1102-1104A

Mathematical models
A Model for Yielding in Anisotropic Metals. 107-114A

Short Range Order Hardening With Second Neighbor Interactions in fcc Solid Solutions. 189-194A
Acidic Rate- and Flow-Controlled Dissolution of Uraninite Ores. 405-413B
Mathematical Modeling of Flows in Large Tundish Systems in Steelmaking. 449-459B
Modeling the Development of Strength in Pellets. 479-485B
Heat Flow in Copper Converters. 677-685B
Dependence of Total Elongations of Superplastic Materials on m. 685-690A
Mixing Models for Gas Stirred Metallurgical Reactors. 725-733B
The Role of Transient Convection in the Melting and Solidification in Arc Weldpools. 735-744B
A Modified Interaction Parameter Formalism for Non-Dilute Solutions. 1211-1215A
Reexamination of Grain-Boundary Sliding by Diffusion. 1949-1953A
An Empirical Model for Hot Isostatic Pressing of Metal Powders. 1977-1984A
A Simplified Treatment of Carbon Diffusion in Compound Welds Having an Intermediate Layer. 2083-2084A
The Interaction of Hydrogen With the Interface of Al_2O_3 Particles in Iron. 2183-2186A

Mathematics
See also Finite element method
Mathematical analysis
Mathematical models
Numerical analysis
A Mathematical Model of the Planar Flow Melt Spinning Process. 695-703B

Mattes
See Copper mattes

Measurement
See Calorimetry

Measuring instruments
See Calorimeters

Mechanical hysteresis
See Hysteresis

Mechanical properties
See also Abrasion resistance
Bonding strength
Brittleness
Compressive strength
Creep (materials)
Creep rate
Creep rupture strength
Creep strength
Ductile brittle transition
Ductility
Elongation
Fatigue (materials)
Fatigue life
Fatigue limit
Fatigue strength
Fracture strength
Fracture toughness
Hardness
Hydrogen embrittlement
Impact strength
Internal friction
Modulus of elasticity
Plastic flow
Pseudoelasticity
Reduction of area
Residual stress
Shear strength
Shear stress
Stress relaxation
Superplasticity
Temper brittleness
Tensile properties
Tensile strength
Wear resistance
Yield strength

Mechanical properties, Alloying effects
$L1_2$-Type Ni—Al—Cr Alloys Processed by Rapid Solidification. 1685-1692A

Mechanical properties, Deformation effects
Processing-Structure Characterization of Rheocast IN-100 Superalloy. 2049-2062A

Mechanical tests
See Fracture testing
Tension tests

Mechanical twinning
Transmission Electron Microscopic Observations of Mechanical Twinning in Metastable β Titanium Alloys. 1409-1420A

Mechanics
See Fluid dynamics
Fracture mechanics
Hydrodynamics
Kinetics

Melt spinning
On the Microstructure and Mechanical Behavior of Melt-Spun Fe—24Ni—0.5C Ribbons: Effect of Austenite Grain Size. 127-136A
Microstructure of a Rapidly-Solidified Nickel-Base Eutectic Superalloy. 407-417A
A Mathematical Model of the Planar Flow Melt Spinning Process. 695-703B

Melting
See Vacuum arc melting

Melting furnaces
See Basic converters
Bottom blown converters
Copper converters
Rotary converters
Top blown converters
Vacuum arc furnaces

Memory (shape)
See Shape memory

Mercury (metal), Diffusion
Tracer Diffusion in Mercury: a Predictive Equation. 355-358A

Mercury (metal), Environment
A Comparative Study of the Embrittlement of Monel 400 at Room Temperature by Hydrogen and by Mercury. 889-898A

Mercury (metal), Extraction
Leaching of Cinnabar With HCl-Thiourea Solutions as the Basis of a Process for Mercury Obtention. 443-448B

Metal carbides
See Tungsten carbide

Metal powders
See also Alloy powders

Metal powders, Phase transformations
The Alpha $\rightleftarrows$ Gamma Transformation in Iron Powders. 37-44A

Metal vapors
Metal Vapors in Gas Tungsten Arcs. I. Spectroscopy and Monochromatic Photography. 1851-1863A
Metal Vapors in Gas Tungsten Arcs. II. Theoretical Calculations of Transport Properties. 1865-1871A

Metal working
See Cold working
Forging
Hot rolling
Stretch forming
Thermomechanical treatment
Warm working

Metallic glasses, Crystal growth
Nonlinear Regression Analysis of Superimposed DSC Crystallization Peaks. 1479-1481A

Metallic glasses, Phases (state of matter)
Nature of Large Ti_4Cu_2O Particles Formed During Annealing of $Cu_{55}Ti_{45}$ Metallic Glass Ribbons. 575-581A

Metallographic structures
See Microstructure

Metallography
See also Image analysis
Specimen preparation
Estimation of Average Size of Convex Particles. 742-745A
Orienting Grains With {110} Surface Traces. 961-966A
Nomenclature for Metallographic Sections. 1095A

Metalloid compounds
See Silicon carbide
Silicon dioxide

Metalloids
See Arsenic
Boron
Silicon
Tellurium

Metallurgical constituents
See Sigma phase

Metastable phases
Transformation Sequence in a Cu—Al—Ni Shape Memory Alloy at Elevated Temperatures. 65-72A
Microstructures of Niobium—Germanium Alloys Processed in Inert Gas in the 100 Meter Drop Tube. 1421-1428A
On the Microstructure of Rapidly Solidified Al—15Mn Ribbons: Effect of Annealing in the Temperature Range 300-600°C. 1671-1683A
Icosahedral and Decagonal Phase Formation in Al—Mn Alloys. 2117-2125A

MHD
See Magnetohydrodynamics

Microalloyed steels
See High strength low alloy steels

Microbial leaching
See Bacterial leaching

Microcracking
See Crack initiation

Microfractography
See Fractography

Microscopy
See Stereomicroscopy
Transmission electron microscopy

Microstructure
See also Spheroidal structure
Solidification of Nb—Ge Alloys in Long Drop Tubes. 973-981A
Lower Bainite With Midrib in Hypereutectoid Steels. 1113-1120A

Microstructure, Alloying effects
Microstructure of a Quenched and Tempered Copper-Bearing High-Strength Low-Alloy Steel. 791-798A

Microstructure, Cooling effects
Microstructure of a Rapidly-Solidified Nickel-Base Eutectic Superalloy. 407-417A

Microstructure, Deformation effects
Microstructural Analysis of Residual Projectiles—a New Method to Explain Penetration Mechanisms. 435-442A
Effect of Isothermal Forging on Microstructure and Fatigue Behavior of Blended Elemental Ti—6Al—4V Powder Compacts. 549-559A
The Effect of Thermomechanical History Upon the Microstructure and Magnetic Properties of Nonoriented Silicon Steels. 1267-1275A
The Effect of Hot-Rolling on Chill-Cast Al—Al_3Ni, Chill-Cast Al—Al_2Cu, and Unidirectionally Solidified Al—Al_3Ni Eutectic Alloys. 1985-1993A
Processing-Structure Characterization of Rheocast IN-100 Superalloy. 2049-2062A
Characterization and Modeling of the High Temperature Flow Behavior of Aluminum Alloy 2024. 2227-2237A

Microstructure, Field effects
Microstructural Variations Induced by Gravity Level During Directional Solidification of Near-Eutectic Iron—Carbon Type Alloys. 1121-1130A

Mig arc welding
See Gas metal arc welding

Mills
See Ball mills

Miscibility
Discussion of "Miscibility Gap in Fe—Ni—Al and Fe—Ni—Al—Co Systems" and "Role of Alloying Elements in Phase Decomposition in Alnico Magnet Alloys" 1629-1632A

Mixing
Some Fundamental Aspects of Mixing in Metallurgical Reaction Systems. 487-490B
Mixing Models for Gas Stirred Metaliurgical Reactors. 725-733B

Modification
Misra Technique Applied to Solidification of Cast Iron. 358-360A

Modulus of elasticity
The Effect of Thermal Exposure on the Microstructure and Fiber/Matrix Interface of an Al_2O_3/Al Composite. 1075-1080A

Molds
See Sand molds

Molten metals
See Liquid metals

Molten salts
See Fused salts

Molybdenum, Alloying additive
The Effects of Replacing the Refractory Elements Tungsten, Niobium, and Tantalum With Molybdenum in Nickel-Base Superalloys on Microstructural, Microchemistry, and Mechanical Properties. 651-661A

Molybdenum, Coatings
Phase Diagram Studies of the Systems KCl—K_3MoCl_6 and LiCl—K_3MoCl_6. 231-232B

Molybdenum, Diffusion
Interdiffusion in the Ni—Cr—Co—Mo System at 1300°C. 983-990A

Molybdenum, Ternary systems
Thermodynamics of the Fe—Mo—C System at 985K. 391-398A

Molybdenum chromium nickel steels
See Nickel chromium molybdenum steels

Molybdenum chromium steels
See Chromium molybdenum steels

Molybdenum compounds, Thermal properties
Gibbs Free Energies of Formation of Molybdenum Carbide and Tungsten Carbide From 1173-1573K. 2031-2034A

Molybdenum nickel chromium steels
See Nickel chromium molybdenum steels

Molybdenum steels
See also Chromium molybdenum steels
Chromium molybdenum vanadium steels
Nickel chromium molybdenum steels

Molybdenum steels, Phase transformations
Nucleation Kinetics of Proeutectoid Ferrite at Austenite Grain Boundaries in Fe—C—X Alloys. 1385-1397A

Monocrystals
See Single crystals

Mossbauer spectroscopy
The Chemical Composition of Precipitated Austenite in 9Ni Steel. 967-972A

Necking
Instabilities During Tension of Thin Voided Viscoplastic Sheets. 1637-1640A

New technology
The Structure and Properties of a Nickel-Base Superalloy Produced by Osprey Atomization—Deposition. 583-591A

Nickel, Alloying additive
The Effect of Alloying Additions on the Superplastic Properties of Ti—6Al—4V. 93-106A

Nickel, Alloying elements
The Effect of Silicon and Nickel Additions on the Sulfide Spacing and Fracture Toughness of a 0.4 Carbon Low Alloy Steel. 669-678A
Comparison of Solution Models for Nonmetallic Solutes in Binary Liquid Alloys: Nitrogen in Fe—Cr and Fe—Ni. 785-789B
Sulfide Stress Cracking Susceptibility of Nickel Containing Steels. 1601-1610A
Roles of Dislocations and Grain Boundaries in Martensite Nucleation. 1693-1702A
The Effect of Hot-Rolling on Chill-Cast Al—Al_3Ni, Chill-Cast Al—Al_2Cu, and Unidirectionally Solidified Al—Al_3Ni Eutectic Alloys. 1985-1993A

Nickel, Binary systems
Study of the Enthalpies of Formation in the Gd—Ni System. 777-780A
Magnetic Contributions to the Thermodynamic Functions of Alloys and the Phase Equilibria of Fe—Ni System Below 1200K. 1361-1372A
A Thermodynamic Analysis of the Phase Equilibria of the Fe—Ni System Above 1200K. 1373-1380A

Nickel, Diffusion
The Trapping and Transport Phenomena of Hydrogen in Nickel. 181-187A
Hydrogen Transport During Deformation in Nickel. I. Polycrystalline Nickel. 861-867A
Hydrogen Transport During Deformation in Nickel. II. Single Crystal Nickel. 869-875A
Diffusional Breakdown of a Silver Diffusion Barrier in a Cu—Ag—Ni Diffusion Triple. 933-944A
Determination of the Interdiffusion Coefficients in the Fe—Ni and Fe—Ni—P Systems Below 900°C. 1131-1138A

Nickel, Mechanical properties
A Model for Yielding in Anisotropic Metals. 107-114A

Nickel, Quaternary systems
A Solid-State EMF Study of Ternary Ni—S—O, Fe—S—O, and Quaternary Fe—Ni—S—O. 133-146B
Phase Relationships in the Iron-Rich Fe—Cr—Ni—C System at Solidification Temperatures. 1461-1469A

Nickel, Quinary systems
Phase Relationships in the Fe—Cr—Mn—Ni—C System at Solidification Temperatures. 1825-1835A

Nickel, Reactions (chemical)
Rate of Dissolution of Solid Nickel in Liquid Tin Under Static Conditions. 281-289B
Rates of Dissolution of Solid Iron, Cobalt, Nickel, and Silicon in Liquid Copper and Diffusion Rate of Iron From Liquid Cu—Fe Alloy Into Liquid Copper. 291-305B

Nickel, Recovering
Diffusivity of Cobalt and Nickel Compounds as a Function of Concentration and Temperature. 425-432B

Nickel, Refining
Solubility and Activity of Oxygen in Liquid Nickel in Equilibrium With α-Al_2O_3 and NiO x (1 + x)Al_2O_3. 763-770B

Nickel, Solubility
A Solid-State EMF Study of the Cu—Cu_2O—NiO Three-Phase Equilibrium. 1104-1106A

Nickel, Ternary systems
Estimation of Diffusion Path Slopes at Zero-Flux Plane Compositions. 362-364A
Balance of Distribution of Some Transition Metals Between the (M', M")B and (M', M")$_2$B Phases. 1665-1669A
Experimental and Theoretical Study of the Phase Equilibria in the Fe—Ni—W System. 1809-1823A

Nickel base alloys, Brazing
Examination of the Titanium Environment in a René 41 Nickel Base Superalloy by X-Ray Absorption Spectroscopy. 739-741A

Nickel base alloys, Casting
Processing-Structure Characterization of Rheocast IN-100 Superalloy. 2049-2062A

Nickel base alloys, Coating
CVD Aluminide Nickel. 215-220A

Nickel base alloys, Composite materials
Structure-Performance Maps of Polymeric, Metal, and Ceramic Matrix Composites. 1547-1559A

Nickel base alloys, Corrosion
Relative Stress Corrosion Susceptibilities of Alloys 690 and 600 in Simulated Boiling Water Reactor Environments. 877-887A
A Comparative Study of the Embrittlement of Monel 400 at Room Temperature by Hydrogen and by Mercury. 889-898A
High Temperature Corrosion of Superalloys in an Environment Containing Both Oxygen and Chlorine. 1087-1094A

Nickel base alloys, Crystal growth
Effect of Fluid Flow and Hafnium Content on Macrosegregation in the Directional Solidification of Nickel Base Superalloys. 347-356B
The Effect of Gravity Level on the Average Primary Dendritic Spacing of a Directionally Solidified Superalloy. 2301-2303A

Nickel base alloys, Crystal lattices
Fault Structures in Rapidly Quenched Ni—Mo Binary Alloys. 2291-2294A

Nickel base alloys, Diffusion
Measurement of Segregation and Distribution Coefficients in MAR-M200 and Hafnium-Modified MAR-M200 Superalloys. 419-428A
Interdiffusion in the Ni—Cr—Co—Mo System at 1300°C. 983-990A

Nickel base alloys, Mechanical properties
Effect of Cyclic Deformation on the Pseudoelasticity Characteristics of Ti—Ni Alloys. 115-120A
Constrained Cavity Growth Models of Longitudinal Creep Deformation of Oxide Dispersion Strengthened Alloys. 281-293A
Effect of Environment on Fatigue Crack Propagation Behavior of Alloy 718 at Elevated Temperatures. 370-374A
Orientation and Temperature Dependence of Some Mechanical Properties of the Single-Crystal Nickel-Base Superalloy René N4. I. Tensile Behavior. 491-496A

Orientation and Temperature Dependence of Some Mechanical Properties of the Single-Crystal Nickel-Base Superalloy René N4. II. Low Cycle Fatigue Behavior. 497-505A
Orientation and Temperature Dependence of Some Mechanical Properties of the Single-Crystal Nickel-Base Superalloy René N4: III. Tension—Compression Anisotropy. 507-512A
The Effects of Replacing the Refractory Elements Tungsten, Niobium, and Tantalum With Molybdenum in Nickel-Base Superalloys on Microstructural, Microchemistry, and Mechanical Properties. 651-661A
The Processing and Properties of Heavily Cold Worked Directionally Solidified Ni—W Eutectic Alloys. 1165-1171A
Cyclic Creep and Anelastic Relaxation Analysis of an ODS Superalloy. 1577-1583A
Fatigue Crack Propagation in Nickel-Base Superalloy Single Crystals Under Multiaxial Cyclic Loads. 1739-1750A

Nickel base alloys, Microstructure
Microstructure of a Rapidly-Solidified Nickel-Base Eutectic Superalloy. 407-417A

Nickel base alloys, Oxidation
Void Formation in INCONEL MA-754 by High Temperature Oxidation. 151-162A
Surface Oxide on fcc Iron—Nickel Alloys. 163-167A
Ni_3Nb Alloy Species in Oxide Surfaces of Inconel 718. 351-355A
A Relationship Between Indigenous Impurity Elements and Protective Oxide Scale Adherence Characteristics. 923-932A
Reactions of Fe—Cr and Ni—Cr Alloys in CO/CO_2 Gases at 850 and 950°C. 1065-1074A

Nickel base alloys, Phase transformations
Deformation and Transition Behavior Associated With the R-Phase in Ti—Ni Alloys. 53-63A
Precipitation Processes in Near-Equiatomic TiNi Shape Memory Alloys. 1505-1515A

Nickel base alloys, Phases (state of matter)
$L1_2$-Type Ni—Al—Cr Alloys Processed by Rapid Solidification. 1685-1692A
Influence of Alloy Chemistry on Carbide Precipitation in a Nickel Base Superalloy. 2075-2077A

Nickel base alloys, Powder technology
Microstructure and Stability of Melt Spun Inconel 713LC. 173-180A
The Structure and Properties of a Nickel-Base Superalloy Produced by Osprey Atomization—Deposition. 583-591A
Dendritic Microstructure in Argon Atomized Superalloy Powders. 2099-2102A

Nickel base alloys, Refining
Relationship Between Furnace Voltage Signatures and the Operational Parameters Arc Power, Arc Current, CO Pressure, and Electrode Gap During Vacuum Arc Melting Inconel 718. 357-365B

Nickel base alloys, Structural hardening
The Effects of Tantalum on the Microstructure of Two Polycrystalline Nickel-Base Superalloys: B-1900 + Hafnium and MAR-M247. 1891-1905A
Dislocation/Precipitate Interactions During Coarsening of a Plastically Strained High-Misfit Nickel-Base Superalloy. 2239-2247A

Nickel base alloys, Thermal properties
A Modified Interaction Parameter Formalism for Non-Dilute Solutions. 1211-1215A

Nickel base alloys, Welding
The Welding Metallurgy of Hastelloy Alloys C-4, C-22, and C-276. 2035-2047A
The Use of New PHACOMP in Understanding the Solidification Microstructure of Nickel Base Alloy Weld Metal. 2107-2116A

Nickel chromium molybdenum steels, Corrosion
Hydrogen-Induced Delayed Fracture Under Mode II Loading. 717-725A
Sulfide Stress Cracking Susceptibility of Nickel Containing Steels. 1601-1610A

Nickel chromium molybdenum steels, Mechanical properties
Influence of Prestrain History on Fracture Toughness Properties of Steels. 473-489A
The Influence of Precipitated Austenite on Hydrogen Embrittlement in 5.5Ni Steel. 1157-1164A
Effect of Microstructure on Strength and Toughness of Heat-Treated Low Alloy Structural Steels. 1203-1209A

Nickel chromium steels
See also Nickel chromium molybdenum steels

Nickel chromium steels, Mechanical properties
The Effect of Silicon and Nickel Additions on the Sulfide Spacing and Fracture Toughness of a 0.4 Carbon Low Alloy Steel. 669-678A
Effect of Microstructure on Strength and Toughness of Heat-Treated Low Alloy Structural Steels. 1203-1209A

Nickel compounds, Chemical analysis
Ni_3Nb Alloy Species in Oxide Surfaces of Inconel 718. 351-355A

Nickel compounds, Crystal lattices
$L1_2$-Type Ni—Al—Cr Alloys Processed by Rapid Solidification. 1685-1692A

Nickel compounds, Diffusion
Carbon Segregation to Grain Boundaries in Rapidly Solidified Ni_3Al. 2084-2086A

Nickel compounds, Phase transformations
Precipitation Processes in Near-Equiatomic TiNi Shape Memory Alloys. 1505-1515A

Nickel molybdenum chromium steels
See Nickel chromium molybdenum steels

Nickel molybdenum steels
See Nickel chromium molybdenum steels

Nickel steels
See also Nickel chromium molybdenum steels
Nickel chromium steels

Nickel steels, Chemical analysis
The Chemical Composition of Precipitated Austenite in 9Ni Steel. 967-972A

Nickel steels, Mechanical properties
A Study of the Effect of Precipitated Austenite on the Fracture of a Ferritic Cryogenic Steel. 243-252A
Fracture Behavior in Medium-Carbon Martensitic Silicon- and Nickel-Steels. 1173-1178A

Nickel steels, Metallography
Characterization of Cryogenic Fe—6Ni Steel Fracture Modes: a Three Dimensional Quantitative Analysis. 815-822A

Nickel steels, Phase transformations
Nucleation Kinetics of Proeutectoid Ferrite at Austenite Grain Boundaries in Fe—C—X Alloys. 1385-1397A
The Kinetics of Ferrite Nucleation at Austenite Grain Edges in Fe—C and Fe—C—X Alloys. 1399-1407A

Niobium, Alloying additive
Microstructure and Creep Behavior of a Niobium Alloyed Cast Heat-Resistant 26% Chromium Steel. 691-696A

Niobium, Diffusion
Hydrogen and Deuterium Diffusion in Vanadium—Niobium Alloys. 645-650A
On the Effective Hydrogen Permeability in Metastable β Titanium Alloy, Niobium and 2.25Cr—1Mo Ferritic Steel. 2086-2090A

Niobium, Mechanical properties
Effects of Nitrogen on the Mechanical Behavior of Hydrogenated Vanadium, Niobium, and Tantalum. 527-535A
Effects of Oxygen on the Mechanical Behavior of Hydrogenated Vanadium, Niobium, and Tantalum. 853-859A
The Effects of Interstitials and Hydrogen-Interstitial Interactions on Low Temperature Hardening and Embrittlement in Vanadium, Niobium, and Tantalum. 1179-1189A

Niobium, Solubility
Thermotransport of Carbon in Two-Phase V—C and Nb—C Alloys. 1955-1966A

Niobium base alloys, Crystal growth
Solidification of Nb—Ge Alloys in Long Drop Tubes. 973-981A

Niobium base alloys, Diffusion
Hydrogen and Deuterium Diffusion in Vanadium—Niobium Alloys. 645-650A

Niobium base alloys, Phases (state of matter)
Microstructures of Niobium—Germanium Alloys Processed in Inert Gas in the 100 Meter Drop Tube. 1421-1428A

Niobium compounds, Chemical analysis
Ni_3Nb Alloy Species in Oxide Surfaces of Inconel 718. 351-355A

Niobium compounds, Superconductivity
The Effect of High Temperature Plastic Flow on the Superconducting Transition in A15 Compounds. 399-405A

Nitrogen, Binary systems
The Vanadium—Nitrogen System: a Review. 1647-1656A

Nitrogen, Diffusion
Effects of Nitrogen on the Mechanical Behavior of Hydrogenated Vanadium, Niobium, and Tantalum. 527-535A

Nitrogen, Impurities
The Effects of Interstitials and Hydrogen-Interstitial Interactions on Low Temperature Hardening and Embrittlement in Vanadium, Niobium, and Tantalum. 1179-1189A

Nitrogen, Reactions (chemical)
The Kinetics of the Nitrogen Reaction With Liquid Iron—Chromium Alloys. 317-322B

Nitrogen, Solubility
Nitrogen Solubility in Liquid Iron and Fe—Mn Alloys. 238-239B
The Nitrogen Reaction Between Carbon Saturated Iron and $Na_2O—SiO_2$ Slag. I. Thermodynamics. 535-540B
The Nitrogen Reaction Between Carbon Saturated Iron and $Na_2O—SiO_2$ Slag. II. Kinetics. 541-545B
Comparison of Solution Models for Nonmetallic Solutes in Binary Liquid Alloys: Nitrogen in Fe—Cr and Fe—Ni. 785-789B

Nodular iron, Microstructure
On the Formation of Widmanstätten Austenite. 741A

Nonferrous metals, Extraction
Removal of SO_2 With Oxygen in the Presence of Fe(III). 745-753B

Nonferrous smelting
See Smelting

Nonmetallic inclusions
Inclusion Phases and the Nucleation of Acicular Ferrite in Submerged Arc Welds in High Strength Low Alloy Steels. 1611-1623A
A Model for the Silicon—Manganese Deoxidation of Steel Weld Metals. 1797-1807A

Normalizing (heat treatment)
Effects of Decarburization and Normalizing Heat Treatment in Boron-Silicon Iron Alloys. 1353-1359A

Notch brittleness
See Brittleness

Notch ductility
See Ductility

Notch impact strength
See Impact strength

Notched bar tensile test
See Tension tests

Nuclear fuel claddings
See Nuclear fuel elements

Nuclear fuel elements, Corrosion
Liquid Cesium Tellurium-Induced Fatigue Embrittlement of Cold-Worked 316 Stainless Steel. 2090-2093A

Nuclear reactors
See Boiling water reactors
Pressurized water reactors

Nucleation
On the Critical Nucleus Composition of Ferrite in an Fe—C—Mn Alloy. 1381-1384A
The Kinetics of Ferrite Nucleation at Austenite Grain Edges in Fe—C and Fe—C—X Alloys. 1399-1407A
Nucleation, Growth, and Overall Transformation Kinetics of Grain Boundary Allotriomorphs of Proeutectoid α in Ti—3.2 at.% Co and Ti—6.6 at.% Cr Alloys. 1703-1715A

Nuclei (transformation)
See Nucleation

Numerical analysis
Numerical Modeling of the Propagation of an Adiabatic Shear Band. 443-450A
Thermal Transient Stresses Due to Rapid Cooling in a Thermally and Elastically Orthotropic Medium. 1051-1055A
Instabilities During Tension of Thin Voided Viscoplastic Sheets. 1637-1640A

OBM process
See Quelle-Basic oxygen process

Order disorder
See Short range order

Ores
See Chalcocite
Chalcopyrite
Chromium ores
Galena
Iron ores
Magnetite
Pyrrhotite
Taconite

Orientation
See Grain orientation
Orientation relationships

Orientation relationships
Description of the Intercrystalline Structure Distribution in Polycrystalline Materials. 2199-2207A

OSM process
See Oxygen steel making

Oxidation
See also Internal oxidation
Intrinsic Kinetics of the Oxidation of Chalcopyrite Particles Under Isothermal and Nonisothermal Conditions. 51-60B
Reactions of Fe—Cr and Ni—Cr Alloys in CO/CO_2 Gases at 850 and 950°C. 1065-1074A

Oxidation potential
See Electrode potentials

Oxidation rate
The Formation of Volatile Corrosion Products During the Mixed Oxidation—Chlorination of Cobalt at 650°C. 1223-1228A

Oxidation rate, Impurity effects
Complex Defects in the Oxidation of Uranium. 911-914A

Oxidation reduction potential
See Electrode potentials

Oxidation resistance
Stability of the Chromia Layer on Steels in Flowing Nonequilibrium $H_2—H_2O—CH_4—CO$ Mixtures at 950°C. 915-921A

Oxide coatings
Surface Oxide on fcc Iron—Nickel Alloys. 163-167A
Reactions of Fe—Cr and Ni—Cr Alloys in CO/CO_2 Gases at 850 and 950°C. 1065-1074A

Oxide coatings, Chemical analysis
Ni_3Nb Alloy Species in Oxide Surfaces of Inconel 718. 351-355A

Oxide coatings, Mechanical properties
A Relationship Between Indigenous Impurity Elements and Protective Oxide Scale Adherence Characteristics. 923-932A

Oxide films
See Oxide coatings

Oxides
See also Aluminum oxide
Carbon dioxide
Carbon monoxide
Iron oxides
Lime
Silicon dioxide
Wustite

Oxides, Reduction (chemical)
Kinetics of Reduction of Lead Oxide in Liquid Slag by Carbon in Iron. 271-279B

Oxides, Solubility
PbO Solubility in Lead-Blast Furnace Slags. 817-827B

Oxides, Ternary systems
Electrochemical Determination of Thermodynamic Properties and X-Ray Diffraction Investigation of the $Fe_3O_4—ZnFe_2O_4$ System. 515-521B

Oxidizing
See Oxidation

Oxygen, Binary systems
An Ambiguity in the Definition of the Activity Coefficient at Infinite Dilution. 1484-1485A

Oxygen, Diffusion
Determination of Diffusion Coefficient of Oxygen in γ-Iron From Measurements of Internal Oxidation in Fe—Al Alloys. 221-229A

Oxygen, Impurities
Effects of Oxygen on the Mechanical Behavior of Hydrogenated Vanadium, Niobium, and Tantalum. 853-859A

Oxygen, Quaternary systems
A Solid-State EMF Study of Ternary Ni—S—O, Fe—S—O, and Quaternary Fe—Ni—S—O. 133-146B

Oxygen, Reactions (chemical)
Measurements of Oxygen Pressure in a Copper Flash Smelting Furnace by an EMF Method. 111-117B
Activity Coefficient of Oxygen in Copper—Tellurium Melts. 171-177B

Oxygen, Solubility
Solubility of Oxygen and Sulfur in Copper—Iron Mattes. 147-157B
Correction to "Solubility of Oxygen and Sulfur in Copper—Iron Mattes". 400B

Oxygen, Ternary systems
Thermodynamics of the Si—C—O System for the Production of Silicon Carbide and Metallic Silicon. 503-514B

Oxygen conversion processes
See Oxygen steel making

Oxygen steel making
See also LD process
Quelle-Basic oxygen process
Theoretical and Experimental Study of the Removal of Dust Particles From Flue Gases Using Two-Phase Steam—Water Droplet Mixtures. 665-676B
Soda Slag System for Hot Metal Dephosphorization. 797-804B

Packing (crystal density)
See Crystal structure

Palladium base alloys, Mechanical properties
Metallic Surface Layers Deposited by Diffusional Creep During Internal Oxidation. 746-749A

Parameters
See Welding parameters

Particle size
The Alpha $\rightleftarrows$ Gamma Transformation in Iron Powders. 37-44A
The Critical Grain Size for Liquid Flow Into Pores During Liquid Phase Sintering. 1915-1919A

Particle size distribution
Estimation of Average Size of Convex Particles. 742-745A

Pelleting
Modeling the Development of Strength in Pellets. 479-485B

Pelletizing
See Pelleting

Pellets, Mechanical properties
Modeling the Development of Strength in Pellets. 479-485B

Pellets, Reduction (chemical)
Stresses Induced in Iron-Ore Pellets by Hydrogen Reduction. 217-227B

Penetration
Microstructural Analysis of Residual Projectiles—a New Method to Explain Penetration Mechanisms. 435-442A

Permanent magnets, Magnetic properties
Directional Solidification and Characterization of Near Eutectic Sm_2Co_{17}/Co Alloys. 1149-1155A

Permanent mold casting
The Air-Gap Formation Process at the Casting/Mold Interface and the Heat Transfer Mechanism Through the Gap. 833-844B

Permeability
On the Effective Hydrogen Permeability in Metastable β Titanium Alloy, Niobium and 2.25Cr—1Mo Ferritic Steel. 2086-2090A

Permeability (magnetic)
See Magnetic permeability

Permeation
See Penetration

Phase decomposition
See also Eutectoid decomposition
The Dissolution of Cementite in a Low Carbon Steel During Isothermal Annealing at 700°C. 617-620A
Discussion of "The Early Stages of the Decomposition of Alloys" and Author's Reply. 742A
Precipitation Processes in Near-Equiatomic TiNi Shape Memory Alloys. 1505-1515A
Discussion of "Miscibility Gap in Fe—Ni—Al and Fe—Ni—Al—Co Systems" and "Role of Alloying Elements in Phase Decomposition in Alnico Magnet Alloys". 1629-1632A
On the Microstructure of Rapidly Solidified Al—15Mn Ribbons: Effect of Annealing in the Temperature Range 300-600°C. 1671-1683A

Phase decomposition, Heating effects
Transformation Sequence in a Cu—Al—Ni Shape Memory Alloy at Elevated Temperatures. 65-72A

Phase diagram reactions
See Austenitizing
Eutectic reactions
Eutectoid decomposition
Eutectoid reactions
Martensitic transformations
Phase decomposition

Phase diagrams
A Solid-State EMF Study of Ternary Ni—S—O, Fe—S—O, and Quaternary Fe—Ni—S—O. 133-146B
Phase Diagram Studies of the Systems KCl—K_3MoCl_6 and LiCl—K_3MoCl_6. 231-232B
A Theoretical Evaluation of Chemical Ordering and Glass Transition in Liquid Mg—Sn Alloys. 607-615A
Thermodynamics of the Mn—P System. 777-783B
The Aluminum—Strontium Phase Diagram. 1250-1253A
A Thermodynamic Analysis of the Phase Equilibria of the Fe—Ni System Above 1200K. 1373-1380A
Phase Relationships in the Iron-Rich Fe—Cr—Ni—C System at Solidification Temperatures. 1461-1469A
Direct Use of the Chemical Potential Function in Thermodynamic Modeling of Alloy Phase Diagrams. 1471-1477A
The Solubility of Boron in Iron. 1481-1483A
The Vanadium—Nitrogen System: a Review. 1647-1656A
Experimental and Theoretical Study of the Phase Equilibria in the Fe—Ni—W System. 1809-1823A
Phase Relationships in the Fe—Cr—Mn—Ni—C System at Solidification Temperatures. 1825-1835A
A Modified Regular-Solution Model for Terminal Solutions. 1878-1879A

Phase stability
Deformation and Transition Behavior Associated With the R-Phase in Ti—Ni Alloys. 53-63A
Microstructure and Stability of Melt Spun Inconel 713LC. 173-180A

Phase stability, Diffusion effects
Phase Transformation of Austenitic Stainless Steels as a Result of Cathodic Hydrogen Charging. 1593-1600A
Absence of Hydrogen Influence on the Mechanical Stability of Retained Austenite in a 0.2C/12Cr/1Mo Steel. 1876-1877A

Phase transformations
See also Allotropic transformation
Austenitizing
Martensitic transformations
Surface Oxide on fcc Iron—Nickel Alloys. 163-167A
A Straightforward New Procedure for Determining Crystallization Kinetics by Heating Rate DSC. 561-566A
Analysis of Transformation Kinetics by Nonisothermal Dilatometry. 1441-1445A

Phases (state of matter)
See also Intermetallic phases
Metastable phases
Sigma phase
Solidification of Nb—Ge Alloys in Long Drop Tubes. 973-981A

Phases (state of matter), Alloying effects
$L1_2$-Type Ni—Al—Cr Alloys Processed by Rapid Solidification. 1685-1692A

Phases (state of matter), Cooling effects
Analytical Scanning Transmission Electron Microscopic Study of Metastable Modulated Structure in a Rapidly Quenched Fe—22Ni—8Al—2.4C Alloy. 2077-2080A

Phases (state of matter), Deformation effects
Modification of α Morphology in Ti—6Al—4V by Thermomechanical Processing. 1935-1947A

Phases (state of matter), Field effects
Magnetic Contributions to the Thermodynamic Functions of Alloys and the Phase Equilibria of Fe—Ni System Below 1200K. 1361-1372A

Phosphates
See also Phosphoric acid

Phosphates, Reduction (chemical)
Reduction of Phosphate Ores by Carbon. I. Process Variables for Design of Rotary Kiln System. 861-868B
Reduction of Phosphate Ore by Carbon. II. Rate Limiting Steps. 869-877B

Phosphoric acid, Synthesis
Reduction of Phosphate Ores by Carbon. I. Process Variables for Design of Rotary Kiln System. 861-868B
Reduction of Phosphate Ore by Carbon. II. Rate Limiting Steps. 869-877B

Phosphorus, Binary systems
Thermodynamics of the Mn—P System. 777-783B

Phosphorus, Diffusion
Analysis of Solute Distribution in Dendrites of Carbon Steel With δ/γ Transformation During Solidification. 845-859B
Determination of the Interdiffusion Coefficients in the Fe—Ni and Fe—Ni—P Systems Below 900°C. 1131-1138A

Phosphorus, Impurities
Retained Carbide Distribution in Intercritically Austenitized 52100 Steel. 31-36A
Low Temperature Impact Properties of Phosphorus and Sulfur Doped and Sensitized Type 304 Stainless Steel. 663-668A

Photo oxidation
See Oxidation

Physical chemistry
Thermodynamic Study of Fe_2O_3—$Fe_2(SO_4)_3$ Equilibrium Using an Oxyanionic Electrolyte (Na_2SO_4—I). 323-329B
Comparison of Solution Models for Nonmetallic Solutes in Binary Liquid Alloys: Nitrogen in Fe—Cr and Fe—Ni. 785-789B
Reduction of Phosphate Ore by Carbon. II. Rate Limiting Steps. 869-877B

Physical metallurgy
Discussion of "Lime-Enhanced Reduction of Sulfide Concentrates: a Thermodynamic Discussion" and Authors' Reply. 914-918B
The Welding Metallurgy of Hastelloy Alloys C-4, C-22, and C-276. 2035-2047A

Physical properties
See Anisotropy
Capillarity
Carrier density
Coercive force
Cryogenic properties
Diffusivity
Heat of formation
Heat of mixing
Heat of solution
Magnetic permeability
Miscibility
Permeability
Porosity
Solid solubility
Solubility
Superconductivity
Surface tension
Texture
Thermal stability
Viscosity
Volatility

Pickling
Dissolution Behavior of 304 Stainless Steel in HNO_3/HF Mixtures. 137-149A

Plasma arc welding
Heat Transfer and Fluid Flow in the Welding Arc. 1139-1148A

Plastic deformation
Deformation of a Burgers Oriented Bimetallic Bicrystal of α—β (Ti—13Mn). 451-460A
High-Temperature Plastic Deformation of Two V—Ga Alloys With A15 Structure. 519-525A
Rolling Contact Deformation of 1100 Aluminum Disks. 1561-1572A
Invariance of Neck Formation to Material Strength and Strain Rate for Power-Law Materials. 1632-1633A

Plastic flow
Flow Localization During Plane Strain Punch Stretching of a Ferrite—Austenite Steel. 1537-1546A
Characterization and Modeling of the High Temperature Flow Behavior of Aluminum Alloy 2024. 2227-2237A

Plastic flow, Anisotropy
On the Directionality of Strain Localization When Stretching Aluminum Alloy Sheets in Biaxial Tension. 367-370A

Plastic strain
See Plastic deformation

Plasticity
See Superplasticity

Plate metal, Mechanical properties
Size Effects on the Microscopic Cleavage Stress, σ_F^*, in Martensitic Microstructures. 231-241A

Platinum, Binary systems
An HVEM Study of an Unusual Ordering Reaction in Platinum—Carbon. 807-814A

Platinum metal alloys
See Palladium base alloys

Platinum metals
See Platinum

Point defects
See Interstitial defects
Lattice vacancies

Polarization (electrodes)
See Cathodic polarization

Poling
See Deoxidizing

Pollution
See Air pollution

Pollution abatement
Lime-Enhanced Reduction of Sulfide Concentrates: a Thermodynamic Discussion. 185-196B
Removal of SO_2 With Oxygen in the Presence of Fe(III). 745-753B

Pores
See Porosity

Porosity
Effect of Entrapped Inert Gas on Pore Filling During Liquid Phase Sintering. 2175-2182A

Porosity, Corrosion effects
Void Formation in INCONEL MA-754 by High Temperature Oxidation. 151-162A

Porosity, Size effects
The Critical Grain Size for Liquid Flow Into Pores During Liquid Phase Sintering. 1915-1919A

Portevin-Le Chatelier effect
See Serrated yielding

Potassium, Alloying additive
A Model for the Formation of the Non-Sag Structure of Potassium-Doped Tungsten Wire. 1455-1459A

Potassium, Impurities
An Investigation of the Critical Influence of Potassium on the Reduction of Wustite. 657-663B

Pots (electrolytic)
See Electrolytic cells

Powder compacts
See also Sintered compacts

Powder compacts, Fabrication
The Structure and Properties of a Nickel-Base Superalloy Produced by Osprey Atomization—Deposition. 583-591A

Powder compacts, Mechanical properties
Influence of Foreign Particles on Fatigue Behavior of Ti—6Al—4V Prealloyed Powder Compacts. 271-280A
Effect of Isothermal Forging on Microstructure and Fatigue Behavior of Blended Elemental Ti—6Al—4V Powder Compacts. 549-559A
The Influence of Load Ratio on Fatigue Crack Growth in 7090-T6 and IN9021-T4 P/M Aluminum Alloys. 1787-1795A

Powders
See also Alloy powders
Dendritic powder
Metal powders
A Multi-Phase Model for Plumes in Powder Injection Refining Processes. 77-85B

Power generation
See Electric power generation

Power plants
See Electric power generation

Powerhouses
See Electric power generation

Precious metal alloys
See Palladium base alloys

Precious metals
See Gold
Platinum
Silver

Precipitates
High Temperature Ductility Loss in Carbon—Manganese and Niobium-Treated Steels. 1995-2006A

Precipitates, Chemical analysis
The Chemical Composition of Precipitated Austenite in 9Ni Steel. 967-972A

Precipitates, Composition effects
Influence of Alloy Chemistry on Carbide Precipitation in a Nickel Base Superalloy. 2075-2077A

Precipitates, Crystal growth
Precipitation and Ostwald Ripening in Dilute Aluminum Base-Zr—V Alloys. 2187-2198A
Dislocation/Precipitate Interactions During Coarsening of a Plastically Strained High-Misfit Nickel-Base Superalloy. 2239-2247A

Precipitation
Transformation Sequence in a Cu—Al—Ni Shape Memory Alloy at Elevated Temperatures. 65-72A
Precipitation Processes in Near-Equiatomic TiNi Shape Memory Alloys. 1505-1515A

Precipitation hardening
See also Aging (artificial)
Strain aging
Metallographic and Differential Scanning Calorimetry Analyses of Precipitation and Recrystallization in an Al—Mn Alloy. 593-605A
Discussion of "The Early Stages of the Decomposition of Alloys" and Author's Reply. 742A
Fatigue Crack Growth and Fracture Toughness Behavior of an Al—Li—Cu Alloy. 1011-1026A
Superplasticity in a Thermomechanically Processed High-Magnesium, Al—Mg Alloy. 1035-1041A
The Influence of Thermomechanical Processing Variables on Superplasticity in a High-Magnesium, Al—Mg Alloy. 1043-1050A
Microstructure—Mechanical Property Relationships in Isothermally Transformed Vanadium Steels. 1191-1202A
Matrix and Interfacial Precipitation in the W—Ni—Fe System. 1921-1934A

Precipitation hardening, Alloying effects
Decomposition Characteristics of Al—Mn—Zr Alloys Rapidly-Quenched From the Melt. 799-806A
The Effects of Tantalum on the Microstructure of Two Polycrystalline Nickel-Base Superalloys: B-1900 + Hafnium and MAR-M247. 1891-1905A
Precipitation and Ostwald Ripening in Dilute Aluminum Base-Zr—V Alloys. 2187-2198A

Precipitation hardening, Stress effects
Dislocation/Precipitate Interactions During Coarsening of a Plastically Strained High-Misfit Nickel-Base Superalloy. 2239-2247A

Precipitation hardening alloys, Corrosion
The Effect of Cathodic Polarization on the Corrosion Fatigue Behavior of a Precipitation Hardened Aluminum Alloy. 339-347A

Precipitation heat treatment
See Aging (artificial)
Precipitation hardening

Preferential attack (corrosion)
Dissolution Behavior of 304 Stainless Steel in HNO_3/HF Mixtures. 137-149A

Pregnant liquors
Extraction Equilibria in the System $GaCl_3$—$AlCl_3$—HCl—H_2O—Tributyl Phosphate. 259-265B

Pressing
See Hot isostatic pressing

Pressure
Pressures Produced by Gas Tungsten Arcs. 601-607B

Pressure welding
See Diffusion welding
Resistance spot welding

Pressurized water reactors
Fatigue Crack Growth Rates in a Pressure Vessel Steel Under Various Conditions of Loading and the Environment. 1837-1849A

Prestraining
Influence of Prestrain History on Fracture Toughness Properties of Steels. 473-489A

Prestressing
Flow Behavior of an Aluminum-Killed Steel After Tensile Prestraining and Strain-Aging. 1573-1575A

Process control
Development of an Analytical Equation for Calculation of the Blast Furnace Fuel Rate. 705-724B

Projectiles, Microstructure
Microstructural Analysis of Residual Projectiles—a New Method to Explain Penetration Mechanisms. 435-442A

Propagation
See Crack propagation

Properzi process
See Continuous casting

Protective coatings
Stability of the Chromia Layer on Steels in Flowing Nonequilibrium H_2—H_2O—CH_4—CO Mixtures at 950°C. 915-921A

Protective coatings, Oxidation
A Relationship Between Indigenous Impurity Elements and Protective Oxide Scale Adherence Characteristics. 923-932A

Pseudoelasticity, Deformation effects
Effect of Cyclic Deformation on the Pseudoelasticity Characteristics of Ti—Ni Alloys. 115-120A

Pyrometallurgy
Kinetics of Reduction of Lead Oxide in Liquid Slag by Carbon in Iron. 271-279B
Oxidation of Cobalt Sulfide. 367-373B
Dissolution of Solid Magnetite in Fe—S—O Melt. 639-645B
Agglomeration of Particles During Roasting of Zinc Sulfide Concentrates. 647-656B
An Investigation of the Critical Influence of Potassium on the Reduction of Wustite. 657-663B
Removal of SO_2 With Oxygen in the Presence of Fe(III). 745-753B

Pyrrhotite, Reduction (chemical)
Lime-Enhanced Reduction of Sulfide Concentrates: a Thermodynamic Discussion. 185-196B

Quaternary systems, Phases (state of matter)
A Solid-State EMF Study of Ternary Ni—S—O, Fe—S—O, and Quaternary Fe—Ni—S—O. 133-146B
Phase Relationships in the Iron-Rich Fe—Cr—Ni—C System at Solidification Temperatures. 1461-1469A

Quelle-Basic oxygen process
Model Study of Mixing and Mass Transfer Rates of Slag-Metal in Top and Bottom Blown Converters. 461-469B

Quenching (cooling)
See Quenching and tempering
Rapid solidification

Quenching and tempering
Retained Carbide Distribution in Intercritically Austenitized 52100 Steel. 31-36A

Quenching stresses
See Residual stress

Quinary systems, Phases (state of matter)
Phase Relationships in the Fe—Cr—Mn—Ni—C System at Solidification Temperatures. 1825-1835A

Q-BOP
See Quelle-Basic oxygen process

Rapid solidification
Microstructural Characterization of Rapidly Solidified Al—Li—Co Powders. 73-91A
Microstructures and Mechanical Properties of Melt-Quenched Ferritic Stainless Steels. 261-269A
Solidification of Nb—Ge Alloys in Long Drop Tubes. 973-981A
Microstructures of Niobium—Germanium Alloys Processed in Inert Gas in the 100 Meter Drop Tube. 1421-1428A
Compositional Analysis of the Icosahedral Phase in Rapidly Quenched Al—Mn and Al—V Alloys. 1657-1664A
Analytical Scanning Transmission Electron Microscopic Study of Metastable Modulated Structure in a Rapidly Quenched Fe—22Ni—8Al—2.4C Alloy. 2077-2080A

Rare earth compounds
See Samarium compounds

Rare earth metals
See also Cerium
Gadolinium

Rare earth metals, Chemical analysis
Research on Determination of the Rare-Earth Content in Metal Phases of Steel. 315-323A

Reaction kinetics
The Leaching of Chalcopyrite With Ferric Chloride. 19-28B

An Investigation of the Thermodynamics and Kinetics of the Ferric Chloride Brine Leaching of Galena Concentrate. 29-39B
Intrinsic Kinetics of the Oxidation of Chalcopyrite Particles Under Isothermal and Nonisothermal Conditions. 51-60B
Interfacial Rates of Reaction of CO_2 With Liquid Iron Silicates, Silica-Saturated Manganese Silicates, and Some Calcium Iron Silicates. 307-316B
The Reaction of SiO(g) With Liquid Slags. 397-399B
Kinetics of Galena Dissolution in Ferric Chloride Solutions. 415-423B
Leaching Kinetics of Natural Cobalt Triarsenide in Chlorine Solutions. 629-637B
Reduction of Phosphate Ore by Carbon. II. Rate Limiting Steps. 869-877B

Reaction sintering
See Activated sintering

Reactions (chemical)
See Carbothermic reactions
Chlorination
Deoxidizing
Desulfurizing
Electrolysis
Interface reactions
Internal oxidation
Oxidation

Reactivity (chemical)
See Activity (chemical)

Reactors
See Boiling water reactors
Pressurized water reactors

Recrystallization
See also Grain refinement
Secondary recrystallization
The Influence of Thermomechanical Processing Variables on Superplasticity in a High-Magnesium, Al—Mg Alloy. 1043-1050A

Recrystallization, Alloying effects
Effect of Copper Precipitation on the Development of Recrystallization Textures Through Continuous Annealing of Low-Carbon Sheet Steel. 621-633A
A Model for the Formation of the Non-Sag Structure of Potassium-Doped Tungsten Wire. *1455-1459A*

Recrystallization, Microstructural effects
Deformation and Recrystallization Textures in Commercially Pure Aluminum. 253-259A
Metallographic and Differential Scanning Calorimetry Analyses of Precipitation and Recrystallization in an Al—Mn Alloy. 593-605A

Red hardness
See Hardness

Red shortness
See Brittleness

Redox potential
See Electrode potentials

Reduction (chemical)
See Direct reduction
Flash smelting

Reduction (electrolytic)
See also Electrowinning
Electrolytic Reduction of Uranium(VI) to Uranium(IV) in Acidic Chloride and Acidic Sulfate Solutions. 41-50B

Reduction (metal working)
See Hot rolling

Reduction of area, Impurity effects
The Effects of Interstitials and Hydrogen-Interstitial Interactions on Low Temperature Hardening and Embrittlement in Vanadium, Niobium, and Tantalum. 1179-1189A

Reduction potential
See Electrode potentials

Refining
See Electrorefining
Vacuum refining

Refractory alloys
See Niobium base alloys
Tungsten base alloys
Vanadium base alloys

Refractory metal compounds
See Chromium compounds
Molybdenum compounds
Niobium compounds
Tungsten carbide
Tungsten compounds
Vanadium compounds

Refractory metals
See Chromium
Molybdenum
Niobium
Tantalum
Tungsten
Vanadium

Reinforcement
See Fiber composites

Relaxation
See also Stress relaxation
Cyclic Creep and Anelastic Relaxation Analysis of an ODS Superalloy. 1577-1583A

Residual stress
Orientation and Strain Dependence of Stored Energy of Cold Work in Axisymmetric Copper. 513-517A

Resistance spot welding
Resistance Spot Welding of Galvanized Steel. I. Material Variations and Process Modifications. 879-885B
Resistance Spot Welding of Galvanized Steel. II. Mechanisms of Spot Weld Nugget Formation. 887-901B

Resistance welding
See Resistance spot welding

Resistance welds
See Welded joints

Resistivity
See Superconductivity

Resulfurized steels, Phases (state of matter)
Manganese Sulfide Precipitation in Low-Carbon Resulfurized Free-Machining Steel. 2080-2083A

Retained austenite
The Influence of Precipitated Austenite on Hydrogen Embrittlement in 5.5Ni Steel. 1157-1164A

Retained austenite, Alloying effects
On the Microstructure and Mechanical Behavior of Melt-Spun Fe—24Ni—0.5C Ribbons: Effect of Austenite Grain Size. 127-136A

Revaporization
See Vaporizing

Reviews
Biotechnology/Materials: the Growing Interface. 5-30A

Rheocasting
Processing-Structure Characterization of Rheocast IN-100 Superalloy. 2049-2062A

Rheological properties
See Viscosity

Ribbons (metallic)
See Tapes (metallic)

Roasting
See also Fluidized bed roasting
Intrinsic Kinetics of the Oxidation of Chalcopyrite Particles Under Isothermal and Nonisothermal Conditions. 51-60B
Thermodynamic Study of Fe_2O_3—$Fe_2(SO_4)_3$ *Equilibrium* Using an Oxyanionic Electrolyte (Na_2SO_4—I). 323-329B
Electrochemical Determination of Thermodynamic Properties *and X-Ray Diffraction Investigation of the* Fe_3O_4—$ZnFe_2O_4$ System. 515-521B

Rods, Melting
Experimental Studies on Drop Formation at the Tip of Melting Rods. 471-477B

Roll spot welding
See Resistance spot welding

Rolling
See Hot rolling

Rolling contact
Rolling Contact Deformation of 1100 Aluminum Disks. *1561-1572A*

Rolling texture
Deformation and Recrystallization Textures in Commercially *Pure Aluminum.* *253-259A*

Rotary converters
An Analysis of Radial Segregation for Different Sized Spherical Solids in Rotary Cylinders. *247-257B*

Rotary furnaces
See Rotary converters

Rotary induction furnaces
See Electric induction furnaces

Rotary kilns
See Kilns

Rotary tilting furnaces
See Rotary converters

Rotating machines
An Analysis of Radial Segregation for Different Sized Spherical Solids in Rotary Cylinders. 247-257B

Rotor furnaces
See Rotary converters

Rotor process
See Rotary converters

Roughing (rolling)
See Hot rolling

Rounds, Casting
Rotational Electromagnetic Stirring in Continuous Casting of Round Strands. 119-131B

Rupture strength
See Creep rupture strength

Samarium compounds, Magnetic properties
Directional Solidification and Characterization of Near Eutectic Sm_2Co_{17}/Co Alloys. 1149-1155A

Sand casting
Heat and Moisture Transfer in Sand Molds Containing Water. *903-911B*

Sand molds, Thermal properties
Heat and Moisture Transfer in Sand Molds Containing Water. 903-911B

Scandium compounds, Thermal properties
Standard Enthalpies of Formation of $TiSi_2$ and VSi_2 by High-Temperature Calorimetry. 1217-1221A

Schottky defect
See Lattice vacancies

Scrubbers
Theoretical and Experimental Study of the Removal of Dust Particles From Flue Gases Using Two-Phase Steam—Water Droplet Mixtures. 665-676B

Scrubbing
See Gas scrubbing

Season cracking
See Stress corrosion cracking

Secondary recrystallization
Factors Affecting the Final Grain Size of Decarburized Lamination Steels. 1277-1285A
Origin and Development of Through-the-Thickness Variations of Texture in the Processing of Grain-Oriented Silicon Steel. 1313-1322A

Secondary recrystallization, Heating effects
Effects of Decarburization and Normalizing Heat Treatment in Boron-Silicon Iron Alloys. 1353-1359A

Seeding
See Nucleation

Segregations
An Analysis of Radial Segregation for Different Sized Spherical Solids in Rotary Cylinders. 247-257B
Measurement of Segregation and Distribution Coefficients in MAR-M200 and Hafnium-Modified MAR-M200 Superalloys. 419-428A
Low Temperature Impact Properties of Phosphorus and Sulfur Doped and Sensitized Type 304 Stainless Steel. 663-668A
Analysis of Solute Distribution in Dendrites of Carbon Steel *With δ/γ Transformation During Solidification.* 845-859B
High Temperature Ductility Loss in Carbon—Manganese and Niobium-Treated Steels. 1995-2006A
Carbon Segregation to Grain Boundaries in Rapidly Solidified Ni_3Al. 2084-2086A

Segregations, Alloying effects
Effect of Fluid Flow and Hafnium Content on Macrosegregation in the Directional Solidification of Nickel Base Superalloys. *347-356B*
The Effect of Silicon and Nickel Additions on the Sulfide Spacing and Fracture Toughness of a 0.4 Carbon Low *Alloy Steel.* *669-678A*

Segregations, Cooling effects
The Effect of Solidification Rate on Microsegregation. 2063-2073A

Self diffusion
See Diffusion

Semicontinuous casting
See Continuous casting

Semikilling
See Deoxidizing

Sensitizing
Low Temperature Impact Properties of Phosphorus and Sulfur Doped and Sensitized Type 304 Stainless Steel. 663-668A

Serrated yielding
Numerical Modeling of the Propagation of an Adiabatic Shear Band. 443-450A
Serrated Grain Boundary Formation During High Temperature *Fatigue.* 1100-1102A
Instabilities During Tension of Thin Voided Viscoplastic Sheets. 1637-1640A

Shaft kilns
See Kilns

Shape memory
Transformation Sequence in a Cu—Al—Ni Shape Memory Alloy at Elevated Temperatures. 65-72A
Microstructural Effects of Martensitic *Transformation Cycling of a Cu—Zn—Al Alloy: Vestigial Structures in the* Parent Phase. 195-203A
Deformation of Martensite in a Polycrystalline Cu—Zn—Al *Alloy.* *945-959A*

Shape memory, Deformation effects
Deformation and Transition Behavior Associated With the R-*Phase in Ti—Ni Alloys.* *53-63A*
Effect of Cyclic Deformation on the Pseudoelasticity Characteristics of Ti—Ni Alloys. 115-120A

Shear properties
See Shear strength
Shear stress

Shear strength, Corrosion effects
Examination of the Titanium Environment in a René 41 Nickel Base Superalloy by X-Ray Absorption Spectroscopy. 739-741A

Shear stress
Discussion of "The Bainite Reaction in Fe—Si—C Alloys: the Primary Stage" and "The Bainite Reaction in Fe—Si—*C Alloys: the Secondary Stage".* 1095-1100A

Sheet metal, Crystal growth
Effect of Copper Precipitation on the Development of Re*crystallization Textures Through Continuous Annealing of* Low-Carbon Sheet Steel. 621-633A
Grain Growth in Capped Steel. 1907-1913A

Shielded arc welding
See Gas metal arc welding
Gas tungsten arc welding
Plasma arc welding
Submerged arc welding

Short arc welding
See Gas metal arc welding

Short range order
Short Range Order Hardening With Second Neighbor Interactions in fcc Solid Solutions. 189-194A
An HVEM Study of an Unusual Ordering Reaction in Platinum—Carbon. 807-814A

Sigma hard facing
See Gas metal arc welding

Sigma phase
The Use of New PHACOMP in Understanding the Solidification Microstructure of Nickel Base Alloy Weld Metal. 2107-2116A

Sigma welding
See Gas metal arc welding

Silica
See Silicon dioxide

Silicides, Thermal properties
Standard Enthalpies of Formation of $TiSi_2$ and VSi_2 by High-Temperature Calorimetry. 1217-1221A

Silicon, Alloying elements
The Effect of Silicon and Nickel Additions on the Sulfide Spacing and Fracture Toughness of a 0.4 Carbon Low Alloy Steel. 669-678A
The Effect of Solidification Rate on Microsegregation. 2063-2073A

Silicon, Reactions (chemical)
Rates of Dissolution of Solid Iron, Cobalt, Nickel, and Silicon in Liquid Copper and Diffusion Rate of Iron From Liquid *Cu—Fe Alloy Into Liquid Copper.* *291-305B*

Silicon, Refining
A Study on Purification of Metallurgical Grade Silicon by Mol*ten Salt Electrorefining.* 395-397B

Silicon, Synthesis
Thermodynamics of the Si—C—O System for the Production of Silicon Carbide and Metallic Silicon. 503-514B

Silicon, Ternary systems
Thermodynamics of the Si—C—O System for the Production of Silicon Carbide and Metallic Silicon. 503-514B

Silicon carbide, Composite materials
An *In Situ* HVEM Study of Dislocation Generation at Al/SiC Interfaces in Metal Matrix Composites. 379-389A

Silicon carbide, Synthesis
Thermodynamics of the Si—C—O System for the Production of Silicon Carbide and Metallic Silicon. 503-514B

Silicon compounds
See Silicon carbide
Silicon dioxide

Silicon dioxide, Diffusion
The Reaction of SiO(g) With Liquid Slags. 397-399B

Silicon iron
See Silicon steels

Silicon manganese steels, Corrosion
Stress Corrosion Cracking in High Strength Steel Under Mode III Loading. 711-718A

Silicon steels
See also Electrical steels
Silicon manganese steels

Silicon steels, Composite materials
Superplasticity of a Stainless Steel Clad Ultrahigh Carbon Steel. 2295-2298A

Silicon steels, Crystal growth
Discussion of "The Bainite Reaction in Fe—Si—C Alloys: the Primary Stage" and "The Bainite Reaction in Fe—Si—*C Alloys: the Secondary Stage".* 1095-1100A
Grain Growth Characteristics and Magnetic Properties of Rapidly Quenched Silicon Steel Ribbons. 1295-1299A

Silicon steels, Mechanical properties
Fracture Behavior in Medium-Carbon Martensitic Silicon- and Nickel-Steels. 1173-1178A

Silicon steels, Phase transformations
Nucleation Kinetics of Proeutectoid Ferrite at Austenite Grain Boundaries in Fe—C—X Alloys. 1385-1397A
The Kinetics of Ferrite Nucleation at Austenite Grain Edges *in Fe—C and Fe—C—X Alloys.* *1399-1407A*

Silicon steels, Phases (state of matter)
Development of Ferrous Laminated Composites With Unique *Microstructures by Control of Carbon Diffusion.* *1517-1527A*

Silver, Alloying additive
Effect of Small Additions of Silver on the Eutectic Tempera*ture in the Lead—Tin System.* 829-832B

Silver, Diffusion
Diffusional Breakdown of a Silver Diffusion Barrier in a Cu—Ag—Ni Diffusion Triple. 933-944A

Silver, Extraction
Potentiometric Studies on the Adsorption of $Au(CN)_2^-$ and $Ag(CN)_2^-$ Onto Activated Carbon. 523-528B
Studies on Role of Oxygen in the Adsorption of $Au(CN)_2^-$ and $Ag(CN)_2^-$ Onto Activated Carbon. 529-533B

Silver, Physical properties
The Temperature Coefficient of the Surface Tension of Pure Liquid Metals. 163-170B
Interfacial Tension and Flotation Characteristics of Liquid Metal—Sodium Flux Systems. 339-346B

Simulation
See Computer simulation

Single crystals, Diffusion
Hydrogen Transport During Deformation in Nickel. II. Single *Crystal Nickel.* 869-875A

Single crystals, Mechanical properties
Orientation and Temperature Dependence of Some Mechanical Properties of the Single-Crystal Nickel-Base Superalloy René N4: III. Tension—Compression Anisotropy. 507-512A

Sintered compacts, Microstructure
Formation of Copper Pockets in Iron Grains During the Sintering of Fe—Cu Alloys. 1429-1431A

Sintering (powder metallurgy)
See Activated sintering
Liquid phase sintering

Size distribution (particle)
See Particle size distribution

Slags
See also Blast furnace slags
The Slag—Metal Equilibrium in Tin Smelting. 61-68B
"Central Atoms" Models for Ternary Silicate and Alumino-*Silicate Melts.* 105-110B
The Settling of Metallic Lead From Lead Blast Furnace Slag. 267-270B
Kinetics of Reduction of Lead Oxide in Liquid Slag by Carbon *in Iron.* 271-279B
Interfacial Rates of Reaction of CO_2 With Liquid Iron Silicates, Silica-Saturated Manganese Silicates, and Some Calcium Iron Silicates. 307-316B
The Composition and Temperature Dependence of the Sulfide Capacity of Metallurgical Slags. 331-337B
Model Study of Mixing and Mass Transfer Rates of Slag-*Metal in Top and Bottom Blown Converters.* 461-469B
The Sulfur Partition Ratio and the Sulfide Capacity of $Na_2O—SiO_2$ Slags at 1200°C. 491-496B
Soda Slag System for Hot Metal Dephosphorization. 797-804B

Slags, Diffusion
Measurement of Tracer Diffusivities of Ca^{45} and Fe^{59} in Silica Saturated $FeO—CaO—SiO_2$ Melts With the Porous Frit Technique. 497-501B

Slags, Physical properties
Measurement of the Surface Tensions of Iron-Saturated Iron Silicate and Iron-Saturated Calcium Ferrite Melts by Paddy's Cone Technique. 771-776B

Slags, Solubility
The Nitrogen Reaction Between Carbon Saturated Iron and $Na_2O—SiO_2$ Slag. I. Thermodynamics. 535-540B
The Nitrogen Reaction Between Carbon Saturated Iron and $Na_2O—SiO_2$ Slag. II. Kinetics. 541-545B

Slags, Thermal properties
Thermodynamic Analysis of Ordered Liquid Solutions by a Modified Quasichemical Approach—Application to Silicate Slags. 805-815B

Slip
See also Cross slip
Orientation and Temperature Dependence of Some Mechanical *Properties of the Single-Crystal Nickel-Base Superalloy* René N4. I. Tensile Behavior. 491-496A
Deformation of Martensite in a Polycrystalline Cu—Zn—Al Alloy. 945-959A

Smelting
See also Flash smelting
The Slag—Metal Equilibrium in Tin Smelting. 61-68B

Soaking
Influence of Soaking Treatments on Hot Ductility of Al—*4.85Mg Alloys Containing Manganese.* 833-841A

Soft annealing
See Annealing

Softening
See Strain softening

Solid solubility
A Solid-State EMF Study of the $Cu—Cu_2O—NiO$ Three-Phase Equilibrium. 1104-1106A
Alloying Behavior of Co_3Ti. 1433-1439A
Thermotransport of Carbon in Two-Phase V—C and Nb—C Alloys. 1955-1966A

Solidification
See also Directional solidification
Rapid solidification
Numerical Simulation of Solidification in an Aluminum Casting. 209-216B
The Role of Transient Convection in the Melting and Solidification in Arc Weldpools. 735-744B
Analysis of Solute Distribution in Dendrites of Carbon Steel With δ/γ Transformation During Solidification. 845-859B
Icosahedral and Decagonal Phase Formation in Al—Mn Alloys. 2117-2125A
Three-Dimensional Convection in Laser Melted Pools. 2265-2270A
Computer Simulation of Convection in Moving Arc Weld Pools. 2271-2277A
Dendrite Characteristics in Directionally Solidified Pb—8Au and Pb—3Pd Alloys. 2279-2290A
The Effect of Gravity Level on the Average Primary Dendritic Spacing of a Directionally Solidified Superalloy. 2301-2303A

Solidification, Field effects
Misra Technique Applied to Solidification of Cast Iron. 358-360A

Solids flow
An Analysis of Radial Segregation for Different Sized Spherical *Solids in Rotary Cylinders.* 247-257B

Solubility
See also Solid solubility
The Trapping and Transport Phenomena of Hydrogen in Nickel. 181-187A

Solubility, Alloying effects
Nitrogen Solubility in Liquid Iron and Fe—Mn Alloys. 238-239B

Solution hardening
See Solution strengthening

Solution strengthening, Alloying effects
Decomposition Characteristics of Al—Mn—Zr Alloys *Rapidly-Quenched From the Melt.* 799-806A

Solvent action
Comparison of Solution Models for Nonmetallic Solutes in Binary *Liquid Alloys: Nitrogen in Fe—Cr and Fe—Ni.* 785-789B

Solvent extraction
Chemical Equilibrium Studies on the Iron(III)—Sulfuric Acid / *β-Alkenyl 8 Hydroxy—Quinoline—Xylene System.* 615-620B
Water and Solute Activities of $H_2SO_4—Fe_2(SO_4)_3—H_2O$ and $HCl—FeCl_3—H_2O$ Solution Systems. II. Activities of *Solutes.* 621-627B

Solvus (metallurgical)
See Solid solubility

Sorption
See Adsorption

Specimen preparation
Surface Oxide on fcc Iron—Nickel Alloys. 163-167A

Spectroscopy
See Mossbauer spectroscopy

Spelter
See Zinc

Spheroidal iron
See Nodular iron

Spheroidal structure, Impurity effects
Retained Carbide Distribution in Intercritically Austenitized 52100 Steel. 31-36A

Spheroidizing
Growth of Silicon Particles in an Aluminum Matrix. 2139-2152A

Sponginess
See Porosity

Spot welding
See also Resistance spot welding
The Role of Transient Convection in the Melting and Solidification in Arc Weldpools. 735-744B

Stability
See Phase stability
Thermal stability

Stainless steels
See also Austenitic stainless steels
Duplex stainless steels
Ferritic stainless steels

Stainless steels, Composite materials
Superplasticity of a Stainless Steel Clad Ultrahigh Carbon Steel. 2295-2298A

Stainless steels, Physical properties
Comparison of Surface Tension Measurements Using the *Levitated Droplet Method.* 159-162B

Static fatigue
See Creep rupture strength

Steel alloys
See Alloy steels

Steel constituents
See Austenite
Bainite
Cementite
Ferrite
Martensite
Retained austenite

Steel converters
See Basic converters
Bottom blown converters
Rotary converters
Top blown converters

Steel making
See also LD process
Oxygen steel making
Quelle-Basic oxygen process
The Kinetics of the Nitrogen Reaction With Liquid Iron—Chromium Alloys. 317-322B
Mathematical Modeling of Flows in Large Tundish Systems in Steelmaking. 449-459B
Measurement of Tracer Diffusivities of Ca^{45} and Fe^{59} in Silica Saturated $FeO—CaO—SiO_2$ Melts With the Porous Frit Technique. 497-501B
The Nitrogen Reaction Between Carbon Saturated Iron and $Na_2O—SiO_2$ Slag. I. Thermodynamics. 535-540B

The Nitrogen Reaction Between Carbon Saturated Iron and $Na_2O—SiO_2$ Slag. II. Kinetics. 541-545B
Mixing Models for Gas Stirred Metallurgical Reactors. 725-733B
Thermodynamic Analysis of Ordered Liquid Solutions by a Modified Quasichemical Approach—Application to Silicate Slags. 805-815B

Steels
See also Alloy steels
Aluminum killed steels
Austenitic stainless steels
Bearing steels
Boron steels
Carbon manganese steels
Carbon steels
Chromium molybdenum steels
Chromium molybdenum vanadium steels
Chromium steels
Dual phase steels
Duplex stainless steels
Electrical steels
Ferritic stainless steels
Galvanized steels
High strength low alloy steels
High strength steels
Low alloy steels
Manganese steels
Molybdenum steels
Nickel chromium molybdenum steels
Nickel chromium steels
Nickel steels
Resulfurized steels
Silicon manganese steels
Silicon steels
Stainless steels
Tool steels
Vanadium steels

Steels, Casting
Rotational Electromagnetic Stirring in Continuous Casting of Round Strands. 119-131B
An Ice-Water Model Study on Formation of Blowhole-Free Skin With Reference to Solidification of Steel. 553-564B
Heat and Moisture Transfer in Sand Molds Containing Water. 903-911B

Steels, Chemical analysis
Research on Determination of the Rare-Earth Content in Metal Phases of Steel. 315-323A

Steels, Mechanical properties
The Interaction of Hydrogen With the Interface of Al_2O_3 Particles in Iron. 2183-2186A

Steels, Phase transformations
An Assessment of the Additivity Principle in Predicting Continuous-Cooling Austenite-to-Pearlite Transformation Kinetics Using Isothermal Transformation Data. 1493-1503A
Effects of Copper on Proeutectoid Cementite Precipitation. 2163-2173A

Steels, Refining
The Nitrogen Reaction Between Carbon Saturated Iron and $Na_2O—SiO_2$ *Slag. I. Thermodynamics.* 535-540B
The Nitrogen Reaction Between Carbon Saturated Iron and $Na_2O—SiO_2$ Slag. II. Kinetics. 541-545B

Steels, Welding
A Simplified Treatment of Carbon Diffusion in Compound Welds Having an Intermediate Layer. 2083-2084A

Stereomicroscopy
Estimation of Average Size of Convex Particles. 742-745A
Application of Microstructure Modeling to the Kinetics of Proeutectoid Ferrite Transformation in Hot-Rolled Microalloyed Steels. 1625-1629A
Modulated Microstructures in β Cu—Zn—Al. 2153-2161A

Stirring
See Electromagnetic stirring

Stitch welding
See Spot welding

Stora Kaldo process
See Oxygen steel making

Stored energy
See Internal energy

Strain aging
Flow Behavior of an Aluminum-Killed Steel After Tensile Prestraining and Strain-Aging. 1573-1575A
Strain Aging and Load Relaxation Behavior of Type 316 Stainless Steel at Room Temperature. 1757-1767A

Strain hardening
Metallographic and Differential Scanning Calorimetry Analyses of Precipitation and Recrystallization in an Al—Mn Alloy. 593-605A
Effect of Stress—Strain-Law Transients on Formability. 1001-1009A
The Processing and Properties of Heavily Cold Worked Directionally Solidified Ni—W Eutectic Alloys. 1165-1171A
Strain Hardening of Hadfield Manganese Steel. 1725-1737A

Strain hardening, Heating effects
Effect of Tempering Temperature on the Work-Hardening Rate of Five HSLA Steels. 307-313A

Strain rate
Effect of Stress—Strain-Law Transients on Formability. 1001-1009A
*Superplasticity in a Thermomechanically Processed High-*Magnesium, Al—Mg Alloy. 1035-1041A

Strain softening
Particle Size and Orientation Effects on Softening in a Copper Matrix Containing Rod-Shaped Iron Particles. 1751-1755A

Strength of materials
See Mechanical properties

Strengthening (solution)
See Solution strengthening

Stress aging
See Strain aging

Stress analysis
Invariance of Neck Formation to Material Strength and Strain Rate for Power-Law Materials. 1632-1633A

Stress corrosion cracking
On the Failure Mechanism of Chemically Embrittled Cu_3Au *Single Crystals.* 703-710A
Stress Corrosion Cracking in High Strength Steel Under Mode III Loading. 711-716A
Hydrogen-Induced Delayed Fracture Under Mode II Loading. 717-725A
Relative Stress Corrosion Susceptibilities of Alloys 690 and 600 in Simulated Boiling Water Reactor Environments. 877-887A
Further Observations of SCC in $\alpha—\beta$ *Brass: Considerations Regarding the Appearance of Crack Arrest Markings During SCC.* 1081-1086A
Effect of Notch Root Radius on Stress Intensity in Mode I and Mode III Loading. 1633-1637A
Mechanical Properties and Microstructure of Al—Li—Cu—Mg—Zr Die Forgings. 2007-2016A

Stress corrosion cracking, Alloying effects
Sulfide Stress Cracking Susceptibility of Nickel Containing Steels. 1601-1610A

Stress corrosion resistance
See Corrosion resistance

Stress relaxation
Strain Aging and Load Relaxation Behavior of Type 316 Stainless Steel at Room Temperature. 1757-1767A

Stress relieving
See Grain refinement

Stress rupture strength
See Creep rupture strength

Stress strain curves
Effect of Cyclic Deformation on the Pseudoelasticity Characteristics of Ti—Ni Alloys. 115-120A
Unloading Yield Effects in Aluminum Alloys. 121-128A
Numerical Modeling of the Propagation of an Adiabatic Shear Band. 443-450A
High-Temperature Plastic Deformation of Two V—Ga Alloys With A15 Structure. 519-525A
Effect of Stress—Strain-Law Transients on Formability. 1001-1009A
Rolling Contact Deformation of 1100 Aluminum Disks. 1561-1572A
Instabilities During Tension of Thin Voided Viscoplastic Sheets. 1637-1640A
Strain Hardening of Hadfield Manganese Steel. 1725-1737A
Strain Aging and Load Relaxation Behavior of Type 316 Stainless Steel at Room Temperature. 1757-1767A
Grain Boundary Contribution to the Bauschinger Effect in β-Brass Bicrystals. 2017-2029A
Characterization and Modeling of the High Temperature Flow Behavior of Aluminum Alloy 2024. 2227-2237A

Stress strain curves, Deformation effects
Effect of Isothermal Forging on Microstructure and Fatigue Behavior of Blended Elemental Ti—6Al—4V Powder Compacts. 549-559A

Stress strain curves, Microstructural effects
Microstructural Dependence of Iron—High Manganese Tensile Behavior. 537-547A
A Rationalization of Stress—Strain Behavior of Two-Ductile Phase Alloys. 2209-2226A

Stresses
See Residual stress
Shear stress
Thermal stresses

Stressing
See Prestressing

Stretch forming
Flow Localization During Plane Strain Punch Stretching of a *Ferrite—Austenite Steel.* 1537-1546A

Stretching
See Stretch forming

Strip
See Coils (strip)

Strong liquor
See Pregnant liquors

Strontium, Binary systems
The Aluminum—Strontium Phase Diagram. 1250-1253A

Structural hardening
See also Aging (artificial)
Precipitation hardening
Solution strengthening
Strain aging
Strain hardening
Short Range Order Hardening With Second Neighbor Interactions in fcc Solid Solutions. 189-194A

Structures (crystalline)
See Columnar structure
Crystal structure
Dendritic structure
Equiaxed structure
Grain structure

Hypereutectic structures
Hypereutectoid structures
Hypoeutectic structures
Microstructure
Spheroidal structure
Widmanstatten structure

Subgrain boundaries
See Grain sub boundaries

Submerged arc welding
Inclusion Phases and the Nucleation of Acicular Ferrite in Submerged Arc Welds in High Strength Low Alloy Steels. 1611-1623A

Submerged arc welds
See Welded joints

Sulfates, Environment
Further Observations of SCC in α—β Brass: Considerations Regarding the Appearance of Crack Arrest Markings During SCC. 1081-1086A

Sulfides, Crystal growth
Manganese Sulfide Precipitation in Low-Carbon Resulfurized Free-Machining Steel. 2080-2083A

Sulfides, Environment
Sulfide Stress Cracking Susceptibility of Nickel Containing Steels. 1601-1610A

Sulfides, Oxidation
Oxidation of Cobalt Sulfide. 367-373B

Sulfides, Reduction (chemical)
Lime-Enhanced Reduction of Sulfide Concentrates: a Thermodynamic Discussion. 185-196B

Sulfides, Solubility
The Composition and Temperature Dependence of the Sulfide Capacity of Metallurgical Slags. 331-337B
The Sulfur Partition Ratio and the Sulfide Capacity of Na_2O—SiO_2 Slags at 1200°C. 491-496B

Sulfur, Diffusion
The Composition and Temperature Dependence of the Sulfide Capacity of Metallurgical Slags. 331-337B
The Study of Desulfurization Kinetics in Grain Oriented 3% Silicon Iron. 1347-1351A

Sulfur, Impurities
The Effect of Sulfur on the Gaseous Reduction of Solid Calciowustites. 383-393B
Low Temperature Impact Properties of Phosphorus and Sulfur Doped and Sensitized Type 304 Stainless Steel. 663-668A
A Relationship Between Indigenous Impurity Elements and Protective Oxide Scale Adherence Characteristics. 923-932A
The Effect of Manganese and Sulfur Contents on the Magnetic Properties of Cold Rolled Lamination Steels. 1259-1266A
A Study of the Hydrogen-Induced Degradation of Two Steels Differing in Sulfur Content. 2255-2263A

Sulfur, Quaternary systems
A Solid-State EMF Study of Ternary Ni—S—O, Fe—S—O, and Quaternary Fe—Ni—S—O. 133-146B

Sulfur, Solubility
Solubility of Oxygen and Sulfur in Copper—Iron Mattes. 147-157B
Correction to "Solubility of Oxygen and Sulfur in Copper—Iron Mattes". 400B

Sulphur
See Sulfur

Superalloys, Brazing
Examination of the Titanium Environment in a René 41 Nickel Base Superalloy by X-Ray Absorption Spectroscopy. 739-741A

Superalloys, Casting
Processing-Structure Characterization of Rheocast IN-100 Superalloy. 2049-2062A

Superalloys, Coating
CVD Aluminide Nickel. 215-220A

Superalloys, Composite materials
Structure-Performance Maps of Polymeric, Metal, and Ceramic Matrix Composites. 1547-1559A

Superalloys, Corrosion
Relative Stress Corrosion Susceptibilities of Alloys 690 and 600 in Simulated Boiling Water Reactor Environments. 877-887A
High Temperature Corrosion of Superalloys in an Environment Containing Both Oxygen and Chlorine. 1087-1094A

Superalloys, Crystal growth
Effect of Fluid Flow and Hafnium Content on Macrosegregation in the Directional Solidification of Nickel Base Superalloys. 347-356B
The Effect of Gravity Level on the Average Primary Dendritic Spacing of a Directionally Solidified Superalloy. 2301-2303A

Superalloys, Diffusion
Measurement of Segregation and Distribution Coefficients in MAR-M200 and Hafnium-Modified MAR-M200 Superalloys. 419-428A

Superalloys, Mechanical properties
Constrained Cavity Growth Models of Longitudinal Creep Deformation of Oxide Dispersion Strengthened Alloys. 281-293A
Effect of Environment on Fatigue Crack Propagation Behavior of Alloy 718 at Elevated Temperatures. 370-374A
Orientation and Temperature Dependence of Some Mechanical Properties of the Single-Crystal Nickel-Base Superalloy René N4. I. Tensile Behavior. 491-496A
Orientation and Temperature Dependence of Some Mechanical Properties of the Single-Crystal Nickel-Base Superalloy René N4. II. Low Cycle Fatigue Behavior. 497-505A
Orientation and Temperature Dependence of Some Mechanical Properties of the Single-Crystal Nickel-Base Superalloy René N4: III. Tension—Compression Anisotropy. 507-512A
The Effects of Replacing the Refractory Elements Tungsten, Niobium, and Tantalum With Molybdenum in Nickel-Base Superalloys on Microstructural, Microchemistry, and Mechanical Properties. 651-661A
Cyclic Creep and Anelastic Relaxation Analysis of an ODS Superalloy. 1577-1583A
Fatigue Crack Propagation in Nickel-Base Superalloy Single Crystals Under Multiaxial Cyclic Loads. 1739-1750A

Superalloys, Microstructure
Microstructure of a Rapidly-Solidified Nickel-Base Eutectic Superalloy. 407-417A

Superalloys, Oxidation
Void Formation in INCONEL MA-754 by High Temperature Oxidation. 151-162A
Ni_3Nb Alloy Species in Oxide Surfaces of Inconel 718. 351-355A

Superalloys, Phases (state of matter)
Influence of Alloy Chemistry on Carbide Precipitation in a Nickel Base Superalloy. 2075-2077A

Superalloys, Powder technology
Microstructure and Stability of Melt Spun Inconel 713LC. 173-180A
The Structure and Properties of a Nickel-Base Superalloy Produced by Osprey Atomization—Deposition. 583-591A
Dendritic Microstructure in Argon Atomized Superalloy Powders. 2099-2102A

Superalloys, Refining
Relationship Between Furnace Voltage Signatures and the Operational Parameters Arc Power, Arc Current, CO Pressure, and Electrode Gap During Vacuum Arc Melting Inconel 718. 357-365B

Superalloys, Structural hardening
The Effects of Tantalum on the Microstructure of Two Polycrystalline Nickel-Base Superalloys: B-1900 + Hafnium and MAR-M247. 1891-1905A
Dislocation/Precipitate Interactions During Coarsening of a Plastically Strained High-Misfit Nickel-Base Superalloy. 2239-2247A

Superalloys, Welding
The Welding Metallurgy of Hastelloy Alloys C-4, C-22, and C-276. 2035-2047A
The Use of New PHACOMP in Understanding the Solidification Microstructure of Nickel Base Alloy Weld Metal. 2107-2116A

Superconductivity
Solidification of Nb—Ge Alloys in Long Drop Tubes. 973-981A

Supercooling
Solidification of Nb—Ge Alloys in Long Drop Tubes. 973-981A

Superplasticity
The C.L. m—δ Equation of Superplasticity. 679-684A
Dependence of Total Elongations of Superplastic Materials on m. 685-690A
Superplasticity in a Thermomechanically Processed High-Magnesium, Al—Mg Alloy. 1035-1041A
The Influence of Thermomechanical Processing Variables on Superplasticity in a High-Magnesium, Al—Mg Alloy. 1043-1050A
Superplasticity of a Stainless Steel Clad Ultrahigh Carbon Steel. 2295-2298A

Superplasticity, Alloying effects
The Effect of Alloying Additions on the Superplastic Properties of Ti—6Al—4V. 93-106A
Superplastic Behavior of a Zn—22Al—0.5Cu Alloy. 1873-1875A

Surface chemistry, Heating effects
Lithium Depletion During Heat Treatment of Aluminum—Lithium Alloys. 635-643A

Surface cleaning
See Cleaning

Surface diffusion
See Diffusion

Surface hardening
See Carburizing

Surface properties
See Surface structure
Surface tension

Surface structure
Modulated Microstructures in β Cu—Zn—Al. 2153-2161A

Surface structure, Diffusion effects
Phase Transformation of Austenitic Stainless Steels as a Result of Cathodic Hydrogen Charging. 1593-1600A

Surface structure, Stress effects
Metallic Surface Layers Deposited by Diffusional Creep During Internal Oxidation. 746-749A

Surface tension
Comparison of Surface Tension Measurements Using the Levitated Droplet Method. 159-162B
The Temperature Coefficient of the Surface Tension of Pure Liquid Metals. 163-170B
Interfacial Tension and Flotation Characteristics of Liquid Metal—Sodium Flux Systems. 339-346B
Measurement of the Surface Tensions of Iron-Saturated Iron Silicate and Iron-Saturated Calcium Ferrite Melts by Paddy's Cone Technique. 771-776B

Surface tension, Field effects
Electrocapillarity in the Aluminum Reduction Cell. 547-552B

Susceptibility (magnetic)
See Magnetic permeability

Synthetic coke
See Coke

Systems (metallurgical)
See Binary systems
Quaternary systems
Quinary systems
Ternary systems

Taconite, Reduction (chemical)
Application of Thermodynamic and Kinetic Principles in the Reduction of Metal Oxides by Carbon in a Plasma Environment. 197-207B

Tanks (electrolytic)
See Electrolytic cells

Tantalum, Alloying additive
The Effects of Tantalum on the Microstructure of Two Polycrystalline Nickel-Base Superalloys: B-1900 + Hafnium and MAR-M247. 1891-1905A

Tantalum, Mechanical properties
Effects of Nitrogen on the Mechanical Behavior of Hydrogenated Vanadium, Niobium, and Tantalum. 527-535A
Effects of Oxygen on the Mechanical Behavior of Hydrogenated Vanadium, Niobium, and Tantalum. 853-859A
The Effects of Interstitials and Hydrogen-Interstitial Interactions on Low Temperature Hardening and Embrittlement in Vanadium, Niobium, and Tantalum. 1179-1189A

Tantalum, Solubility
Alloying Behavior of Co_3Ti. 1433-1439A

Tapes (metallic), Crystal lattices
Fault Structures in Rapidly Quenched Ni—Mo Binary Alloys. 2291-2294A

Tellurides
Thermodynamic Properties and Defect Structure of Semiconducting Compound Phases: Tin Telluride. 1241-1245A

Tellurium, Alloying elements
Activity Coefficient of Oxygen in Copper—Tellurium Melts. 171-177B

Tellurium, Environment
Liquid Cesium Tellurium-Induced Fatigue Embrittlement of Cold-Worked 316 Stainless Steel. 2090-2093A

Temper brittleness
New Considerations on Tempered Martensite Embrittlement. 745-746A

Temperature
See Critical temperature
Eutectic temperature
Glass transition temperature
Transition temperature (superconductivity)

Tempering
See also Quenching and tempering
The Influence of Precipitated Austenite on Hydrogen Embrittlement in 5.5Ni Steel. 1157-1164A
Fracture Behavior in Medium-Carbon Martensitic Silicon- and Nickel-Steels. 1173-1178A

Tenacity
See Tensile strength

Tensile modulus
See Modulus of elasticity

Tensile properties
See also Elongation
Reduction of area
Tensile strength
Yield strength
Fatigue Crack Growth and Fracture Toughness Behavior of an Al—Li—Cu Alloy. 1011-1026A
The Influence of Precipitated Austenite on Hydrogen Embrittlement in 5.5Ni Steel. 1157-1164A

Tensile properties, Alloying effects
The Microstructure and Mechanical Properties of a Modified 2.25Cr—1Mo Steel. 1027-1034A

Tensile properties, Deformation effects
Effect of Isothermal Forging on Microstructure and Fatigue Behavior of Blended Elemental Ti—6Al—4V Powder Compacts. 549-559A
The Effect of Hot-Rolling on Chill-Cast Al—Al_3Ni, Chill-Cast Al—Al_2Cu, and Unidirectionally Solidified Al—Al_3Ni Eutectic Alloys. 1985-1993A

Tensile properties, Microstructural effects
Orientation and Temperature Dependence of Some Mechanical Properties of the Single-Crystal Nickel-Base Superalloy René N4. I. Tensile Behavior. 491-496A
Tensile Properties of Directionally Solidified Al—4Cu Alloys With Columnar and Equiaxed Grains. 823-832A
Microstructure—Mechanical Property Relationships in Isothermally Transformed Vanadium Steels. 1191-1202A

Tensile properties, Stress effects
Flow Behavior of an Aluminum-Killed Steel After Tensile Prestraining and Strain-Aging. 1573-1575A

Tensile shear strength
See Shear strength

Tensile strength
Superplasticity in a Thermomechanically Processed High-Magnesium, Al—Mg Alloy. 1035-1041A
The Influence of Thermomechanical Processing Variables on Superplasticity in a High-Magnesium, Al—Mg Alloy. 1043-1050A
The Effect of Thermal Exposure on the Microstructure and Fiber/Matrix Interface of an Al_2O_3/Al Composite. 1075-1080A
The Processing and Properties of Heavily Cold Worked Directionally Solidified Ni—W Eutectic Alloys. 1165-1171A
Mechanical Properties and Microstructure of Al—Li—Cu—Mg—Zr Die Forgings. 2007-2016A

Tensile strength, Microstructural effects
Orientation and Temperature Dependence of Some Mechanical Properties of the Single-Crystal Nickel-Base Superalloy René N4: III. Tension—Compression Anisotropy. 507-512A
Microstructural Dependence of Iron—High Manganese Tensile Behavior. 537-547A

Tensile strength, Stress effects
Thermal Transient Stresses Due to Rapid Cooling in a Thermally and Elastically Orthotropic Medium. 1051-1055A

Tensile tests
See Tension tests

Tensile yield strength
See Yield strength

Tension
See Surface tension

Tension tests
Unloading Yield Effects in Aluminum Alloys. 121-126A
Instabilities During Tension of Thin Voided Viscoplastic Sheets. 1637-1640A

Ternary systems, Diffusion
Estimation of Diffusion Path Slopes at Zero-Flux Plane Compositions. 382-384A

Ternary systems, Phases (state of matter)
A Solid-State EMF Study of Ternary Ni—S—O, Fe—S—O, and Quaternary Fe—Ni—S—O. 133-146B
Discussion of "The Grain Refining of Aluminum and Phase Relationships in the Al—Ti—B System" and Reply. 349-351A
Thermodynamics of the Fe—Mo—C System at 985K. 391-398A
Direct Use of the Chemical Potential Function in Thermodynamic Modeling of Alloy Phase Diagrams. 1471-1477A
Balance of Distribution of Some Transition Metals Between the (M', M")B and (M', M")$_2$B Phases. 1665-1669A
Experimental and Theoretical Study of the Phase Equilibria in the Fe—Ni—W System. 1809-1823A

Ternary systems, Thermal properties
Computation of Thermodynamic Properties of Multi-Component Solutions: Extension of Toop Model. 1102-1104A

Texture
See also Rolling texture
The Effect of Thermomechanical History Upon the Microstructure and Magnetic Properties of Nonoriented Silicon Steels. 1267-1275A
New Information on Texture Development in Regular and High-Permeability Grain-Oriented Silicon Steels. 1301-1312A
Origin and Development of Through-the-Thickness Variations of Texture in the Processing of Grain-Oriented Silicon Steel. 1313-1322A
Description of the Intercrystalline Structure Distribution in Polycrystalline Materials. 2199-2207A

Texture, Deformation effects
Formation of the Goss Orientation Near the Surface of 3% Silicon Steel During Hot Rolling. 1323-1334A

Thermal analysis
See Differential thermal analysis

Thermal flux
See Heat transmission

Thermal measurements
See Calorimetry

Thermal properties
See Heat of formation
Heat of mixing
Heat of solution
Thermal stability
Volatility

Thermal reduction
See Flash smelting

Thermal stability
The Effect of Thermal Exposure on the Microstructure and Fiber/Matrix Interface of an Al_2O_3/Al Composite. 1075-1080A

Thermal stresses
Thermal Transient Stresses Due to Rapid Cooling in a Thermally and Elastically Orthotropic Medium. 1051-1055A

Thermochemistry
Rates of Dissolution of Solid Iron, Cobalt, Nickel, and Silicon in Liquid Copper and Diffusion Rate of Iron From Liquid Cu—Fe Alloy Into Liquid Copper. 291-305B

Thermodynamics
An Investigation of the Thermodynamics and Kinetics of the Ferric Chloride Brine Leaching of Galena Concentrate. 29-39B
"Central Atoms" Models for Ternary Silicate and Alumino-Silicate Melts. 105-110B
Activity of Arsenic in Molten Lead. 235-238B
Thermodynamic Study of Fe_2O_3—$Fe_2(SO_4)_3$ Equilibrium Using an Oxyanionic Electrolyte (Na_2SO_4—I). 323-329B
Thermodynamics of the Fe—Mo—C System at 985K. 391-398A
Thermodynamics of the Si—C—O System for the Production of Silicon Carbide and Metallic Silicon. 503-514B
Electrochemical Determination of Thermodynamic Properties and X-Ray Diffraction Investigation of the Fe_3O_4—$ZnFe_2O_4$ System. 515-521B
Thermodynamic Analysis of Ordered Liquid Solutions by a Modified Quasichemical Approach—Application to Silicate Slags. 805-815B

Computation of Thermodynamic Properties of Multi-Component Solutions: Extension of Toop Model. 1102-1104A
A Solid-State EMF Study of the Cu—Cu_2O—NiO Three-Phase Equilibrium. 1104-1106A
A Modified Interaction Parameter Formalism for Non-Dilute Solutions. 1211-1215A
Thermodynamic Properties and Defect Structure of Semiconducting Compound Phases: Tin Telluride. 1241-1245A
Magnetic Contributions to the Thermodynamic Functions of Alloys and the Phase Equilibria of Fe—Ni System Below 1200K. 1361-1372A
Direct Use of the Chemical Potential Function in Thermodynamic Modeling of Alloy Phase Diagrams. 1471-1477A
An Ambiguity in the Definition of the Activity Coefficient at Infinite Dilution. 1484-1485A
Thermodynamic Properties of Carbides in 2.25Cr—1Mo Steel at 985K. 1585-1592A
A Modified Regular-Solution Model for Terminal Solutions. 1878-1879A

Thermoelastic properties
See Internal friction
Shape memory

Thermomechanical treatment
Deformation and Transition Behavior Associated With the R-Phase in Ti—Ni Alloys. 53-63A
Superplasticity in a Thermomechanically Processed High-Magnesium, Al—Mg Alloy. 1035-1041A
The Influence of Thermomechanical Processing Variables on Superplasticity in a High-Magnesium, Al—Mg Alloy. 1043-1050A
Modification of α Morphology in Ti—6Al—4V by Thermomechanical Processing. 1935-1947A

Thermostability
See Thermal stability

Tig arc welding
See Gas tungsten arc welding

Tilting furnaces
See Basic converters
Bottom blown converters
Copper converters
Top blown converters

Tilting rotary furnaces
See Rotary converters

Tin, Binary systems
A Theoretical Evaluation of Chemical Ordering and Glass Transition in Liquid Mg—Sn Alloys. 607-615A
Calorimetric and Emf Studies on Liquid Li—Sn Alloys. 791-796B
Effect of Small Additions of Silver on the Eutectic Temperature in the Lead—Tin System. 829-832B

Tin, Extraction
The Slag—Metal Equilibrium in Tin Smelting. 61-68B

Tin, Physical properties
Interfacial Tension and Flotation Characteristics of Liquid Metal—Sodium Flux Systems. 339-346B

Tin, Powder technology
An Empirical Model for Hot Isostatic Pressing of Metal Powders. 1977-1984A

Tin, Reactions (chemical)
Rate of Dissolution of Solid Nickel in Liquid Tin Under Static Conditions. 281-289B

Tin base alloys, Crystal growth
The Effect of Convection on the Dendrite to Eutectic Transition. 991-1000A

Tin compounds, Superconductivity
The Effect of High Temperature Plastic Flow on the Superconducting Transition in A15 Compounds. 399-405A

Tin compounds, Thermal properties
Thermodynamic Properties and Defect Structure of Semiconducting Compound Phases: Tin Telluride. 1241-1245A

Titanium, Alloying elements
Processing of Iron—Titanium Powder Mixtures by Transient Liquid Phase Sintering. 205-213A

Titanium, Ternary systems
Discussion of "The Grain Refining of Aluminum and Phase Relationships in the Al—Ti—B System" and Reply. 349-351A

Titanium base alloys, Composite materials
Structure-Performance Maps of Polymeric, Metal, and Ceramic Matrix Composites. 1547-1559A

Titanium base alloys, Diffusion
On the Effective Hydrogen Permeability in Metastable β Titanium Alloy, Niobium and 2.25Cr—1Mo Ferritic Steel. 2086-2090A

Titanium base alloys, Mechanical properties
The Effect of Alloying Additions on the Superplastic Properties of Ti—6Al—4V. 93-106A
Effect of Cyclic Deformation on the Pseudoelasticity Characteristics of Ti—Ni Alloys. 115-120A
Influence of Foreign Particles on Fatigue Behavior of Ti—6Al—4V Prealloyed Powder Compacts. 271-280A
Deformation of a Burgers Oriented Bimetallic Bicrystal of α—β (Ti—13Mn). 451-460A
Effect of Isothermal Forging on Microstructure and Fatigue Behavior of Blended Elemental Ti—6Al—4V Powder Compacts. 549-559A
Dependence of Total Elongations of Superplastic Materials on m. 685-690A
A Rationalization of Stress—Strain Behavior of Two-Ductile Phase Alloys. 2209-2226A

Titanium base alloys, Phase transformations
Deformation and Transition Behavior Associated With the R-Phase in Ti—Ni Alloys. 53-63A
Transmission Electron Microscopic Observations of Mechanical Twinning in Metastable β Titanium Alloys. 1409-1420A
Precipitation Processes in Near-Equiatomic TiNi Shape Memory Alloys. 1505-1515A
Nucleation, Growth, and Overall Transformation Kinetics of Grain Boundary Allotriomorphs of Proeutectoid α in Ti—3.2 at.% Co and Ti—6.6 at.% Cr Alloys. 1703-1715A

Titanium base alloys, Phases (state of matter)
Modification of α Morphology in Ti—6Al—4V by Thermomechanical Processing. 1935-1947A

Titanium compounds, Impurities
The Vapor—Liquid Equilibria of the Aluminum Chloride—Titanium Tetrachloride System. 609-610B

Titanium compounds, Phase transformations
Precipitation Processes in Near-Equiatomic TiNi Shape Memory Alloys. 1505-1515A

Titanium compounds, Solubility
Alloying Behavior of Co_3Ti. 1433-1439A

Titanium compounds, Thermal properties
Standard Enthalpies of Formation of $TiSi_2$ and VSi_2 by High-Temperature Calorimetry. 1217-1221A

Tool steels, Microstructure
Microstructural Analysis of Residual Projectiles—a New Method to Explain Penetration Mechanisms. 435-442A

Top blown converters
Model Study of Mixing and Mass Transfer Rates of Slag-Metal in Top and Bottom Blown Converters. 461-469B

Torsional strength
See Shear strength

Toughness
See Fracture toughness

Tracers, Diffusion
Tracer Diffusion in Mercury: a Predictive Equation. 355-358A

Transferring
See Heat transfer
Mass transfer

Transformations (materials)
See Allotropic transformation
Martensitic transformations
Phase transformations

Transformer steels
See Electrical steels

Transgranular fracture
Fracture of Fe_3Al. 2298-2300A

Transition joints, Diffusion
A Simplified Treatment of Carbon Diffusion in Compound Welds Having an Intermediate Layer. 2083-2084A

Transition metal alloys
See Cadmium base alloys
Cobalt base alloys
Copper base alloys
Ferrous alloys
Manganese base alloys
Nickel base alloys
Niobium base alloys
Palladium base alloys
Titanium base alloys
Tungsten base alloys
Vanadium base alloys
Zinc base alloys
Zirconium base alloys

Transition metal compounds
See Chromium compounds
Cobalt compounds
Copper compounds
Iron compounds
Iron oxides
Molybdenum compounds
Nickel compounds
Niobium compounds
Scandium compounds
Titanium compounds
Tungsten carbide
Tungsten compounds
Vanadium compounds
Zinc compounds

Transition metals
See also Chromium
Cobalt
Copper
Gold
Hafnium
Iron
Manganese
Mercury (metal)
Molybdenum
Nickel
Niobium
Platinum
Silver
Tantalum
Titanium
Tungsten

Vanadium
Yttrium
Zinc
Zirconium

Transition metals, Physical properties
Comparison of Surface Tension Measurements Using the Levitated Droplet Method. 159-162B
The Temperature Coefficient of the Surface Tension of Pure Liquid Metals. 163-170B

Transition temperature (superconductivity), Deformation effects
The Effect of High Temperature Plastic Flow on the Superconducting Transition in A15 Compounds. 399-405A

Transmission
See Heat transmission

Transmission electron microscopy
Surface Oxide on fcc Iron—Nickel Alloys. 163-167A

Traps
The Interaction of Hydrogen With the Interface of Al_2O_3 Particles in Iron. 2183-2186A

Tubes
See Capillary tubes

Tundishes, Design
Mathematical Modeling of Flows in Large Tundish Systems in Steelmaking. 449-459B

Tungsten, Crystal growth
A Model for the Formation of the Non-Sag Structure of Potassium-Doped Tungsten Wire. 1455-1459A

Tungsten, Solubility
Alloying Behavior of Co_3Ti. 1433-1439A

Tungsten, Ternary systems
Experimental and Theoretical Study of the Phase Equilibria in the Fe—Ni—W System. 1809-1823A

Tungsten arc welding
See Gas tungsten arc welding

Tungsten base alloys, Mechanical properties
The Processing and Properties of Heavily Cold Worked Directionally Solidified Ni—W Eutectic Alloys. 1165-1171A

Tungsten base alloys, Microstructure
Microstructural Analysis of Residual Projectiles—a New Method to Explain Penetration Mechanisms. 435-442A

Tungsten base alloys, Powder technology
An Analysis of the Surface Menisci in a Mixture of Liquid and Deformable Grains. 325-330A
The Effect of the Binder Phase Melting Temperature on Enhanced Sintering. 903-906A
The Critical Grain Size for Liquid Flow Into Pores During Liquid Phase Sintering. 1915-1919A

Tungsten base alloys, Structural hardening
Matrix and Interfacial Precipitation in the W—Ni—Fe System. 1921-1934A

Tungsten carbide, Thermal properties
Gibbs Free Energies of Formation of Molybdenum Carbide and Tungsten Carbide From 1173-1573K. 2031-2034A

Tungsten compounds
See also Tungsten carbide

Tungsten compounds, Thermal properties
Gibbs Free Energies of Formation of Molybdenum Carbide and Tungsten Carbide From 1173-1573K. 2031-2034A

Turbine blades, Coating
CVD Aluminide Nickel. 215-220A

Turbines
See Gas turbines

Turbulent flow
Turbulent Recirculating Flow in Induction Furnaces: a Comparison of Measurements With Predictions Over a Range of Operating Conditions. 687-693B

Tuyeres
Heat Flow in Copper Converters. 677-685B

Twinning
See also Mechanical twinning
Deformation of Martensite in a Polycrystalline Cu—Zn—Al Alloy. 945-959A
Strain Hardening of Hadfield Manganese Steel. 1725-1737A

Ultimate shear strength
See Shear strength

Ultimate tensile strength
See Tensile strength

Undercooling
See Supercooling

Uranium, Extraction
Electrolytic Reduction of Uranium(VI) to Uranium(IV) in Acidic Chloride and Acidic Sulfate Solutions. 41-50B
Laboratory Reduction Rate and Current Efficiency Studies of Batch Type Electrolytic Reduction of Uranium(VI) in a Sulfate System. 69-76B
Acidic Rate- and Flow-Controlled Dissolution of Uraninite Ores. 405-413B

Uranium, Oxidation
Complex Defects in the Oxidation of Uranium. 911-914A

Uranium, Phase transformations
The β-to-α Phase Transformation in a Uranium Alloy. 1717-1723A

Vacancies (crystal defects)
See Lattice vacancies

Vacancies (lattice)
See Lattice vacancies

Vacuum arc furnaces
Relationship Between Furnace Voltage Signatures and the Operational Parameters Arc Power, Arc Current, CO Pressure, and Electrode Gap During Vacuum Arc Melting Inconel 718. 357-365B

Vacuum arc melting
Relationship Between Furnace Voltage Signatures and the Operational Parameters Arc Power, Arc Current, CO Pressure, and Electrode Gap During Vacuum Arc Melting Inconel 718. 357-365B

Vacuum brazing
Examination of the Titanium Environment in a René 41 Nickel Base Superalloy by X-Ray Absorption Spectroscopy. 739-741A

Vacuum furnaces
See Vacuum arc furnaces

Vacuum melting
See Vacuum arc melting

Vacuum refining
A Kinetic Model for the Vacuum Refining of Inductively Stirred Copper Melts. 87-103B

Vanadium, Alloying additive
The Microstructure and Mechanical Properties of a Modified 2.25Cr—1Mo Steel. 1027-1034A

Vanadium, Alloying elements
Precipitation and Ostwald Ripening in Dilute Aluminum Base-Zr—V Alloys. 2187-2198A

Vanadium, Binary systems
The Vanadium—Nitrogen System: a Review. 1647-1656A

Vanadium, Diffusion
Hydrogen and Deuterium Diffusion in Vanadium—Niobium Alloys. 645-650A

Vanadium, Mechanical properties
Effects of Nitrogen on the Mechanical Behavior of Hydrogenated Vanadium, Niobium, and Tantalum. 527-535A
Effects of Oxygen on the Mechanical Behavior of Hydrogenated Vanadium, Niobium, and Tantalum. 853-859A
The Effects of Interstitials and Hydrogen-Interstitial Interactions on Low Temperature Hardening and Embrittlement in Vanadium, Niobium, and Tantalum. 1179-1189A

Vanadium, Solubility
Alloying Behavior of Co_3Ti. 1433-1439A
Thermotransport of Carbon in Two-Phase V—C and Nb—C Alloys. 1955-1966A

Vanadium base alloys, Diffusion
Hydrogen and Deuterium Diffusion in Vanadium—Niobium Alloys. 645-650A

Vanadium base alloys, Mechanical properties
High-Temperature Plastic Deformation of Two V—Ga Alloys With A15 Structure. 519-525A

Vanadium compounds, Thermal properties
Standard Enthalpies of Formation of $TiSi_2$ and VSi_2 by High-Temperature Calorimetry. 1217-1221A

Vanadium steels
See also Chromium molybdenum vanadium steels

Vanadium steels, Mechanical properties
Microstructure—Mechanical Property Relationships in Isothermally Transformed Vanadium Steels. 1191-1202A

Vapor deposition
See Vapor deposition coating

Vapor deposition coating
CVD Aluminide Nickel. 215-220A

Vaporizing
Thermodynamics of Gaseous SbS. 913-914B

Vapors
See Metal vapors
Water vapor

Viscosity
A Calculation of Viscosities for Iron—Metalloid Liquids. 901-903A

Volatility
The Formation of Volatile Corrosion Products During the Mixed Oxidation—Chlorination of Cobalt at 650°C. 1223-1226A

Volatilizing
See Vaporizing

Warm working
Superplasticity in a Thermomechanically Processed High-Magnesium, Al—Mg Alloy. 1035-1041A
The Influence of Thermomechanical Processing Variables on Superplasticity in a High-Magnesium, Al—Mg Alloy. 1043-1050A

Washing
See Gas scrubbing

Water vapor, Environment
Complex Defects in the Oxidation of Uranium. 911-914A

Wear
See Hot gas corrosion

Wear resistance
Wear Resistance of Quenched and Tempered AISI 4137H Steel. 295-306A

Weld defects
Solidification and Solidification Cracking in Nitrogen-Strengthened Austenitic Stainless Steels. 727-737A
The Welding Metallurgy of Hastelloy Alloys C-4, C-22, and C-276. 2035-2047A
The Use of New PHACOMP in Understanding the Solidification Microstructure of Nickel Base Alloy Weld Metal. 2107-2116A

Weld metal
A Model for the Silicon—Manganese Deoxidation of Steel Weld Metals. 1797-1807A

Weld metal, Crystal growth
The Role of Transient Convection in the Melting and Solidification in Arc Weldpools. 735-744B

Weld metal, Microstructure
The Use of New PHACOMP in Understanding the Solidification Microstructure of Nickel Base Alloy Weld Metal. 2107-2116A

Weldability
Solidification and Solidification Cracking in Nitrogen-Strengthened Austenitic Stainless Steels. 727-737A
Resistance Spot Welding of Galvanized Steel. I. Material Variations and Process Modifications. 879-885B
Metal Vapors in Gas Tungsten Arcs. I. Spectroscopy and Monochromatic Photography. 1851-1863A
Metal Vapors in Gas Tungsten Arcs. II. Theoretical Calculations of Transport Properties. 1865-1871A
The Welding Metallurgy of Hastelloy Alloys C-4, C-22, and C-276. 2035-2047A

Welded joints, Crystal growth
Computer Simulation of Convection in Moving Arc Weld Pools. 2271-2277A

Welded joints, Mechanical properties
Discussion of "Fundamental Aspects of Formation and Stability of Explosive Welds" and Reply. 374A

Welded joints, Phases (state of matter)
Inclusion Phases and the Nucleation of Acicular Ferrite in Submerged Arc Welds in High Strength Low Alloy Steels. 1611-1623A

Welded joints, Thermal properties
Computer Modeling of Heat Flow in Welds. 587-600B

Welding
See Arc welding
Diffusion welding
Gas metal arc welding
Gas tungsten arc welding
Laser beam welding
Plasma arc welding
Resistance spot welding
Spot welding
Submerged arc welding

Welding parameters
Resistance Spot Welding of Galvanized Steel. I. Material Variations and Process Modifications. 879-885B
Resistance Spot Welding of Galvanized Steel. II. Mechanisms of Spot Weld Nugget Formation. 887-901B
Metal Vapors in Gas Tungsten Arcs. II. Theoretical Calculations of Transport Properties. 1865-1871A

Welds
See Welded joints

Widmanstatten structure
On the Formation of Widmanstätten Austenite. 741A

Wire, Crystal growth
A Model for the Formation of the Non-Sag Structure of Potassium-Doped Tungsten Wire. 1455-1459A

Wolfram
See Tungsten

Work hardening
See Strain hardening

Work softening
See Strain softening

Work strengthening
See Strain hardening

Workability
See also Formability

Workability, Heating effects
Influence of Soaking Treatments on Hot Ductility of Al—4.85Mg Alloys Containing Manganese. 833-841A

Wustite
On the Gibbs Energy of Formation of Wustite. 179-184B

Wustite, Reduction (chemical)
The Gaseous Reduction of Solid Calciowustites in CO/CO_2 and H/H_2O Gas Mixtures. 375-381B
The Effect of Sulfur on the Gaseous Reduction of Solid Calciowustites. 383-393B
An Investigation of the Critical Influence of Potassium on the Reduction of Wustite. 657-663B

Yield strength
Numerical Modeling of the Propagation of an Adiabatic Shear Band. 443-450A
High-Temperature Plastic Deformation of Two V—Ga Alloys With A15 Structure. 519-525A
Characterization and Modeling of the High Temperature Flow Behavior of Aluminum Alloy 2024. 2227-2237A

Yield strength, Alloying effects
The Effects of Replacing the Refractory Elements Tungsten, Niobium, and Tantalum With Molybdenum in Nickel-Base Superalloys on Microstructural, Microchemistry, and Mechanical Properties. 651-661A
Effect of Aluminum Content on Low Temperature Tensile Properties in Cryogenic Fe/Mn/Al/Nb/C Steels. 2097-2098A

Yield strength, Cooling effects
Microstructures and Mechanical Properties of Melt-Quenched Ferritic Stainless Steels. 261-269A

Yield strength, Deformation effects
Unloading Yield Effects in Aluminum Alloys. 121-126A

Yield strength, Diffusion effects
Effects of Nitrogen on the Mechanical Behavior of Hydrogenated Vanadium, Niobium, and Tantalum. 527-535A

Yield strength, Impurity effects
Effects of Oxygen on the Mechanical Behavior of Hydrogenated Vanadium, Niobium, and Tantalum. 853-859A
The Effects of Interstitials and Hydrogen-Interstitial Interactions on Low Temperature Hardening and Embrittlement in Vanadium, Niobium, and Tantalum. 1179-1189A

Yield strength, Microstructural effects
A Model for Yielding in Anisotropic Metals. 107-114A
Orientation and Temperature Dependence of Some Mechanical Properties of the Single-Crystal Nickel-Base Superalloy René N4: III. Tension—Compression Anisotropy. 507-512A
Microstructural Dependence of Iron—High Manganese Tensile Behavior. 537-547A
Effect of Microstructure on Strength and Toughness of Heat-Treated Low Alloy Structural Steels. 1203-1209A
A Rationalization of Stress—Strain Behavior of Two-Ductile Phase Alloys. 2209-2226A

Yield stress
See Yield strength

Youngs modulus
See Modulus of elasticity

Yttrium, Alloying additive
A Relationship Between Indigenous Impurity Elements and Protective Oxide Scale Adherence Characteristics. 923-932A

Zinc, Diffusion
Anomalously Fast Diffusion in the Fe—Zn System. 1523-1527A

Zinc, Extraction
Electrochemical Determination of Thermodynamic Properties and X-Ray Diffraction Investigation of the Fe_3O_4—$ZnFe_2O_4$ System. 515-521B
Agglomeration of Particles During Roasting of Zinc Sulfide Concentrates. 647-656B

Zinc, Mechanical properties
A Model for Yielding in Anisotropic Metals. 107-114A

Zinc, Ternary systems
Estimation of Diffusion Path Slopes at Zero-Flux Plane Compositions. 362-364A

Zinc base alloys, Mechanical properties
The C.L. m—δ Equation of Superplasticity. 679-684A
Superplastic Behavior of a Zn—22Al—0.5Cu Alloy. 1873-1875A

Zinc compounds, Ternary systems
Electrochemical Determination of Thermodynamic Properties and X-Ray Diffraction Investigation of the Fe_3O_4—$ZnFe_2O_4$ System. 515-521B

Zirconium, Alloying elements
Decomposition Characteristics of Al—Mn—Zr Alloys Rapidly-Quenched From the Melt. 799-806A
Precipitation and Ostwald Ripening in Dilute Aluminum Base-Zr—V Alloys. 2187-2198A

Zirconium base alloys, Welding
The Diffusion Bonding of Zr—2.5Nb to Steel. 429-434A